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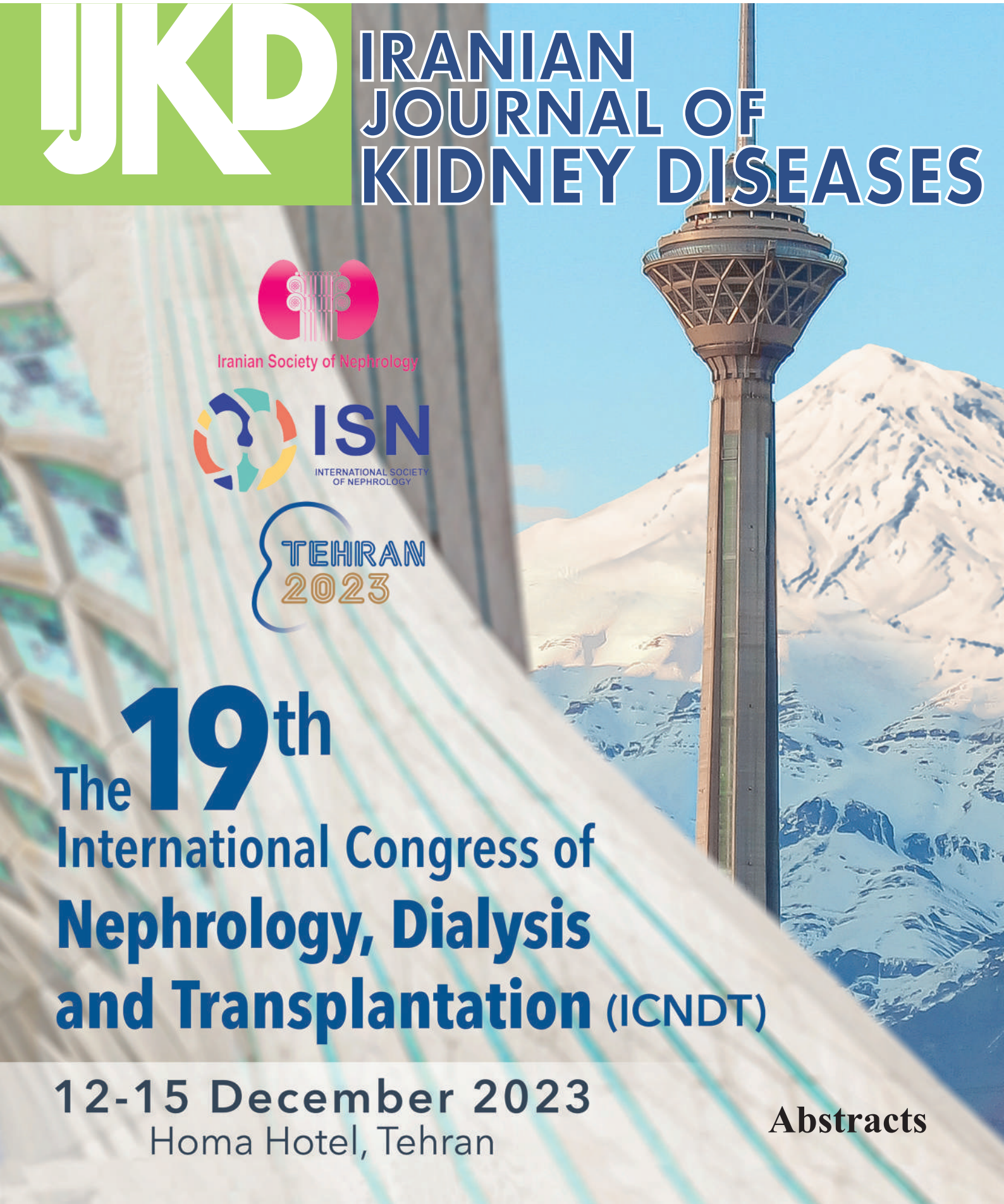

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TEHRAN 2023

The 19th International Congress of Nephrology, Dialysis and Transplantation (ICNDT)

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Abstracts

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IJKD IRANIAN JOURNAL OF KIDNEY DISEASES

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The Iranian Journal of Kidney Diseases (IJKD), a peer-reviewed journal in English, is the official publication of the Iranian Society of Nephrology. The aim of the *IJKD* is the worldwide reflection of the knowledge produced by the scientists and clinicians in nephrology. Published every 2 months, the *IJKD* provides a new platform for advancement of the field. The journal's objective is to serve as a focal point for debates and interchange of knowledge and experience among researchers in a global context. Original papers, case reports, and invited reviews on all aspects of the kidney diseases, hypertension, dialysis, and transplantation will be covered by the *IJKD*. Research on the basic science, clinical practice, and socio-economics of renal health are all welcomed by the editors of the journal.

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ABSTRACTS

The 19th International Congress of Nephrology, Dialysis, and Transplantation (ICNDT)

1361 Higher Viral Load of Polyomavirus Type BK, Rather than JC, Among Renal Transplant Recipients Compared to Donors

Maryam Hami,[1] Samaneh Abolbashari,[2] Mohammadtaghi Shakeri,[3] Zahra Meshkat,[4] Aida Gholoobi[5]

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Introduction. Polyomaviruses BK and JC, along with Cytomegalovirus (CMV), have been implicated in complications arising from kidney transplantation. This research is an attempt to determine the prevalence of these viruses among patients undergoing kidney transplantation.
Methods. This cross-sectional study was conducted on 40 kidney transplant recipients and 44 donors. Viral DNA was extracted from urine samples. The prevalence of JC and BK viruses, as well as their viral loads, was determined using real-time polymerase chain reaction.
Results. JC virus was detected in 31% of all participants, while BK virus was found in 92.3% of them. There was no statistically significant difference in the occurrence of JC and BK viruses between the recipient and donor groups ($P > .05$). Additionally, all donors and 96.8% of recipients tested positive for CMV IgG antibody. The average viral load of BK virus in donors and recipients was 4.5×10^{10} and 3.3×10^{11} copies, respectively. For JC virus, the mean viral load was 8.6×10^{7} copies in donors and 2.9×10^{8} copies in recipients. The distribution of BKV was significantly higher in recipients compared to donors ($P = .001$), whereas no difference was observed between the two groups studied for JC Virus.
Conclusion. This research revealed a relatively elevated prevalence of BK and JC viruria among both renal transplant donors and recipients. Specifically, the viral load for BK virus was higher in recipients compared to donors, while no such difference was observed for JC virus.

1385 Prevalence of Vesicoureteral Reflux and Renal Scarring in A Pediatric Population with UTI: Comparing Patients ≤ 5 Years with Those > 5 Years of Age

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Introduction. UTIs represent a serious clinical concern in childhood. The highest incidence of UTIs occurs within two age groups: infants under one year and children aged 2-4 years. Early detection of renal scarring is crucial as scarring and subsequent reduced kidney function can lead to severe health complications and diminished quality of life. Comparing the frequency of vesicoureteral reflux and renal scarring in children aged 5 years or younger affected by urinary tract infections versus those older than 5 years.

Methods. A longitudinal study was conducted on children under 18 years of age diagnosed with urinary tract infections between October 2003 and October 2016. Cases who underwent kidney-bladder ultrasound and voiding cystourethrogram were identified. Tc-99m DMSA was utilized in patients with febrile urinary tract infections, those with vesicoureteral reflux, or in cases of renal scarring detected in kidney ultrasound. Patients without vesicoureteral reflux (VUR) and those without febrile urinary tract infections (UTIs) were much less likely to undergo evaluation with a DMSA scan compared to those with high-grade VUR and/or febrile UTIs. This resulted in a selection bias, as DMSA scans were performed in only 47% of patients. Patients with neurogenic bladder, urinary obstruction, and those with undetermined age at presentation were excluded from the study.

Results. In total, 816 patients were enrolled in the study, comprising 719 girls (88.1%) and 97 boys (11.9%), with an average age of 33.26 ± 32.47 months. The study population included 675 patients (82.7%) in the age group of 5 years or younger, and 141 patients (17.3%) older than 5 years. Vesicoureteral reflux was significantly more common in the age group of 5years or younger compared to the age group older than 5 years ($P < .0001$). However, the frequency of high-grade vesicoureteral reflux did not differ significantly between the two groups ($P = .888$). Renal scarring was observed in 33.4% of patients, with no significant difference in frequency between the age groups ($P = .523$). Notably, kidney units with severe scarring were significantly more prevalent in patients older than 5 years compared to those aged 5 years or younger ($P = .024$).

Conclusion. Vesicoureteral reflux was found to be more prevalent in patients aged 5 years or younger, whereas high-grade vesicoureteral reflux was equally common in children older than 5 years as in those aged 5 years or younger. Additionally, no specific risk factor for renal

scarring was identified, but kidney units with severe scarring were more prevalent in cases older than 5 years. It is worth noting that the overall lower prevalence of vesicoureteral reflux in patients with renal scarring in the older than five age group may have been influenced by the possibility that vesicoureteral reflux occurring in younger years may have resolved spontaneously over time.

1387 Are the Long-term Outcomes of En Bloc Kidney Transplantation from Pediatric Deceased Donors Comparable to Those from Adult Donors?

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Introduction. Kidney transplantation represents the optimal approach for kidney replacement therapy in patients with End-Stage Kidney Disease (ESKD). However, a significant disparity exists between the number of patients in need of kidney transplantation and the availability of kidney donors. En bloc kidney transplantation involves transplanting both kidneys, along with the surrounding tissues and blood vessels, from a single donor into a recipient. Utilizing en bloc kidney transplantation from pediatric donors offers a potential solution to broaden the pool of available kidney donors. The objective of our study was to assess and compare the long-term outcomes of En bloc kidney transplantation from pediatric donors to the recipients from adult donors.

Methods. In our medical center, Shariati Hospital, Tehran, we have conducted 13 En bloc kidney transplants from pediatric donors to adult recipients since 2016. To evaluate the efficacy of these transplants, we conducted a comparative analysis with 52 kidney transplant recipients who received grafts from adult donors during a similar time frame. The primary outcomes considered included changes in estimated glomerular filtration rate (eGFR) and graft survival. Secondary outcomes included patient survival, the occurrence of delayed graft function, and instances of allograft vascular thrombosis.

Results. The mean age of pediatric donors was 3.2 ± 1.5, while the mean age of adult kidney donors was 31.1 ± 9.7. The mean age of recipients from pediatric donors and adult donors was 44.1 ± 9.4 and 40.1 ± 10.4, respectively, with no significant difference observed (P = .168).

For recipients of pediatric donor kidneys, the one-year and five-year graft survival rates were 76.9 and 69.2%, respectively. And for allografts from adult donors, these rates were 94.2 and 90.4%, respectively. The five-year patient survival rates were 84.6% for recipients of pediatric kidneys and 96.2% for recipients of adult kidneys. There was no significant difference between the two groups in terms of graft survival (P = .070) and patient survival (P = .176). An intriguing finding was that the one-year estimated glomerular filtration rate (eGFR) was lower in recipients of pediatric kidneys (61 ± 20) compared to recipients of adult kidneys (72 ± 22). However, by the five-year mark, eGFR values for recipients of pediatric kidneys (73 ± 12) were nearly equivalent to those for recipients of adult kidneys (74 ± 20), although this difference was not statistically significant (P = .925). The only significant finding in this study was a higher incidence of vascular thrombosis in the En bloc transplant group

compared to the conventional transplant group.
Conclusion. The outcomes of En bloc pediatric kidney transplantation are comparable to those of conventional kidney transplantation. This approach is not only feasible but can also be employed in carefully selected patients, thereby expanding the pool of potential kidney transplant donors.

1403 Epidemiology of Biopsy Proven Glomerulonephritis in Iran: A Single Center Report from a Referral Kidney Center

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Introduction. Glomerulonephritis (GN) is a major cause of CKD worldwide. Early diagnosis and prompt treatment are crucial to avoid progression to kidney failure and would substantially reduce the dialysis burden. To date, GN registries have been established in only a few countries, and there is a scarcity in available reports. As the largest glomerulonephritis referral center in Iran, we present a registry report of patients with biopsy-proven GN of native kidneys recruited over the past 24 years at Hasheminejad Kidney Center (HKC).

Methods. This retrospective observational registry includes 6548 kidney biopsies conducted at HKC, Tehran, from 1998 to 2023. Demographic data, laboratory findings (such as serum creatinine level, 24-hour urine protein, existence of hematuria), clinical syndromes at presentation and medical history including hypertension, and histopathological diagnosis were extracted from the GN registry of HKC.

Results. The study population consisted of 6548 patients, with a mean age of 56.2 ± 2.6 years old, 55.4% male. Lupus nephritis (LN) was found to be more prevalent in females while other types were common in male patients ($P < .001$). The lowest mean age was observed in LN patients (31.79 ± 11.31 years) and the highest mean age was observed in patients with amyloidosis (55.4 ± 15.4 years). The most common clinical presentation observed was nephrotic syndrome (49.9%), followed by sub-nephrotic proteinuria (22.5%), acute kidney injury (AKI) (9.6%), nephritic syndrome (7.2%), azotemia (6.9%), CKD (2.3%), nephrotic-nephritic syndrome (1.2%) and isolated hematuria (0.4%). The most frequent pathologies were membranous glomerulonephritis (MGN) (24.9%), focal segmental glomerulosclerosis (FSGS) (14.1%) and IgA-nephropathy (IgAN) (12.1%). The frequency of different GNs remained constant during the study period, except for a rise in diabetic kidney disease and a reduction in membranoproliferative glomerulonephritis frequencies. The prevalence of various types of glomerulonephritis remained consistent throughout the study period, with the exception of an increase in diabetic kidney disease and a decrease in the frequencies of membranoproliferative glomerulonephritis. In patients presenting with nephrotic syndrome, membranous glomerulonephritis (MGN) was the most common histopathologic diagnosis (36.8%). The most common diagnoses among patients presenting with nephritic syndrome, sub-nephrotic proteinuria, AKI and azotemia were IgA Nephropathy (IgAN) (28%), MGN (24.3%), tubulointerstitial nephritis (26%) and FSGS

(18.1%), respectively.
Conclusion. The most common indication for kidney biopsy in our center was nephrotic syndrome and the most prevalent histopathological diagnoses were membranous glomerulonephritis (MGN) and focal segmental glomerulosclerosis (FSGS). There have been changes in the frequencies of certain types of glomerulonephritis over the 24-year study period.

1408

Biopsy Proven Non-Diabetic Kidney Disease among Diabetic Patients; Report from a Single Center Registry

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Introduction. The prevalence of diabetes mellitus (DM) is increasing worldwide, with diabetic kidney disease (DKD) as one of its major complications, which commonly progresses to kidney failure. Non-diabetic kidney disease (NDKD) can also occur in patients with DM alone or simultaneously with DKD. The aim of this study was to evaluate the frequency and clinicopathologic correlation of biopsy-proven NDKD in patients with diabetes who had been biopsied within the last 24 years in Hasheminejad Kidney Center (HKC).

Methods. This retrospective observational study was conducted on 576 diabetic patients, among 6548 registered patients, who underwent kidney biopsy at Hasheminejad Kidney Center (HKC) between 1998 and 2023, Tehran, Iran. Demographic information, laboratory data (including serum creatinine level (SCr), 24-hour urine protein, presence of hematuria), clinical syndromes at presentation, and medical history (including hypertension and DM, and histopathological diagnosis) were extracted from the glomerulonephritis (GN) of HKC. Patients with histopathologic diagnoses of diabetic kidney disease (DKD) and non-diabetic kidney disease (NDKD) were compared in terms of their clinical and laboratory characteristics.

Results. Among 576 biopsied diabetic patients, 266 (46.1%) were diagnosed with DKD, while 310 (53.8%) were diagnosed with NDKD, based on histopathologic findings. The most prevalent histopathologic diagnosis of NDKD was membranous glomerulonephritis (26.7%), followed by focal and segmental glomerulosclerosis (18.7%), IgA nephropathy (11.6%), tubulointerstitial nephritis (11.6%) and other diagnoses (31.4%). In the DKD group, 36 (13.9%) patients had no previous history of diabetes mellitus (DM). Additionally, hemoglobin levels were lower, and erythrocyte sedimentation rate (ESR) and SCr were higher in DKD group compared to the NDKD group. Serum creatinine levels above 1.4 mg/dL were more frequent, while hypertension and nephritic syndrome were less frequent in the DKD group. However, there was no significant difference in the frequency of hematuria and acute kidney injury (AKI) between the two groups (*P*: 0.341 and 0.962, respectively). Furthermore, the annual number of kidney biopsies in diabetic patients had increased since 1998.

Conclusion. In our series, acute kidney injury (AKI), hematuria and laboratory findings were not distinctive factors between DKD and NDKD. Given the wide variation in the frequency of NDKD depending on the

selection criteria for kidney biopsy across different centers, it appears that there is a need to establish new criteria for deciding on kidney biopsy in diabetic patients.

1427 Acute Kidney Injury After Liver Transplant, A Single Center Report

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Introduction. Acute kidney injury (AKI) represents a critical complication in the context of liver transplantation, contributing significantly to post-operative morbidity and mortality. Liver transplantation (LTx), as a life-saving procedure for end-stage liver disease, often involves complex hemodynamic and metabolic changes that can predispose patients to AKI. We present the prevalence of AKI, risk factors, and outcomes associated with liver transplant recipients (LTR) in 192 patients who were transplanted in Firoozgar Hospital from June 2019 To July 2023.

Methods. The study group consisted of 192 liver transplant recipients (LTR) including 120 male (62.5%) and 72 female (37.5%) with a mean age 44.5 ± range 7 to 75 Years. AKI was defined as any change in serum creatinine of more than 0.3 mg/dL within 48 hours that persisted for 5 days after liver transplantation (LTx). The estimated glomerular filtration rate (eGFR) was calculated based on CKD-Epi 2021 with the mean range of 94.9 ± 34.3 cc/min. We evaluated demographic data and any history of diabetes mellitus, hypertension, chronic kidney disease, nephrotoxic drugs, massive bleeding, the need to receive vasopressor drug, liver failure etiology, respiratory assistance, sepsis, any indication for readmission in the operating room, Model for End-Stage Liver Disease (MELD) score, and liver function after LTx as the risk factors of AKI. The outcome was defined as death within one month after LTx. Data was analyzed with the SPSS program version 24.

Results. AKI happened in 105 (54.7%) patients and the mortality rate was 19.3% (37). LTx mortality was correlated with female gender, AKI, patient's age, bleeding volume, MELD score, and admission duration ($P < .05$). The risk factors for AKI in the univariate analysis were massive bleeding and need for blood transfusion, receiving vasopressors, readmission in the operating room, duration on ventilatory support, baseline eGFR, and impaired liver function tests ($P < .05$). Multivariate analysis proved that the baseline eGFR, duration on ventilatory support, need for vasopressors and bleeding volume were the main risk factors for AKI after Liver Tx in this study ($P < .05$).

AKI, patient's age, bleeding volume, MELD score, and admission duration ($P < .05$). The risk factors for AKI in the univariate analysis were massive bleeding and need for blood transfusion, receiving vasopressors, readmission in the operating room, duration on ventilatory support, baseline eGFR, and impaired liver function tests ($P < .05$). Multivariate analysis proved that the baseline eGFR, duration on ventilatory support,

need for vasopressors and bleeding volume were the main risk factors for AKI after Liver Tx in this study ($P < .05$).

Conclusion. This study supports that the main risk factors for AKI after LTx are hemodynamic factors. A comprehensive understanding of the complex interplay between liver transplantation and kidney injury improves outcomes in this high-risk population.

This study underscores that the primary risk factors for AKI after LTx are hemodynamic factors. A comprehensive understanding of the intricate interplay between liver transplantation and kidney injury is crucial for improving outcomes in this high-risk population.

1447 Evaluation of the Effect of Empagliflozin on Lipid and Microalbuminuria in Patients with Type 2 Diabetes

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Introduction. Selective sodium-glucose transporter 2 (SGLT2) inhibitors inhibit glucose reabsorption by the kidneys. They are shown to have beneficial effects on cardiovascular complications and mortality. One possible explanation for the decrease in cardiac complications associated with SGLT2 inhibitors is that these medications improve vascular endothelial function and prevent cardiovascular complications in individuals with diabetes mellitus by lowering triglyceride and blood cholesterol levels, which in turn leads to a reduction in inflammatory factors. The purpose of this study was to determine the effect of empagliflozin on triglyceride levels in individuals with type 2 diabetes mellitus with hypertriglyceridemia.

Methods. The baseline demographic characteristics of 38 patients were recorded in this cross-sectional study. Subsequently, patients were, referred to a reference laboratory for evaluation of fasting blood sugar and 2 hours post prandial blood sugar, serum triglyceride, cholesterol, LDL, HDL, HbA1c, insulin, creatinine, calcium, phosphorus, uric acid, and albuminuria in random urine samples. After confirming the patient's hypertriglyceridemia and ensuring the indication for drug administration and the absence of contraindications, the patients were started on empagliflozin 10 mg tablets daily for three months. Following the 3-month treatment period, patients were examined and history was taken to assess outcomes.

Results. After treatment with empagliflozin, significant improvements were observed in BMI, weight, albuminuria, FBS, two-hour post prandial blood sugar, and HbA1c significantly improved ($P < .05$). Additionally, treatment with empagliflozin significantly reduced triglyceride, cholesterol, and LDL levels ($P < .05$). While HDL levels were higher after treatment compared to before treatment, this difference was not statistically significant. Empagliflozin had no effect on serum AST, ALT, and creatinine ($P > .05$), but BUN levels significantly improved. There was no significant positive correlation between HbA1c, HDL, and triglyceride ($P > .05$).

Conclusion. In addition to its hypoglycemic effects in patients with type 2 diabetes mellitus,
empagliflozin can improve triglyceride and cholesterol levels in these patients. Furthermore, it can cause weight loss, reduce high blood pressure, BUN, and microalbuminuria. Further studies with larger sample sizes are recommended to validate these findings and explore additional benefits of empagliflozin in patients with type 2 diabetes mellitus.

1450 Prevalence and Antibiotic Susceptibility Pattern of Bacterial Urinary Tract Infection in Renal Transplant Recipients

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Introduction. Infection is a serious complication in renal transplant recipients and urinary tract infections (UTI) being the most common. This study was to determine the prevalence of various UTI pathogens and their antibiotic susceptibility patterns among renal transplant recipients.
Methods. This study was conducted on patients undergoing kidney transplantation, including both brain death and living donors. All patients received treatment with ceftriaxone 2 g daily (until catheter and drain removal) and co-trimoxazole for at least 6 months after the transplant. Urine samples were collected for analysis and culture on the first and second days after surgery and then every three days thereafter.
After discharge, patients were routinely examined under a specific schedule and urine cultures were requested whenever there was a positive leukocyte urine test, or if the patient was symptomatic or had elevated creatinine levels. Additionally, urine cultures were requested in patients hospitalized due to fever. Positive urine culture results were then evaluated for the type of microorganism and antibiotic susceptibility. Data analysis was performed using SPSS 22 software.
Results. Out of 370 studied participants, 133 (35.9%) were male and 237 (64.1%) were female. Escherichia coli (E.coli) was the most commonly isolated microorganism (58.7%) followed by Klebsiella (19.5%). The highest antibiotic resistance rates were highest for tetracycline (96.8%) and Amoxicillin (96.5%) while the lowest resistance rates were observed for Cefixime (16.9%) followed by Norfloxacin (22.7%).
Conclusion. The high resistance rate observed in the isolated bacteria from renal transplant patients should be considered in clinical decision making to effectively prevent and manage UTI among renal transplant patients.

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Prevalence and Risk Factors of Valvular Calcification in Peritoneal Dialysis Patients and Hemodialysis

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Introduction. Cardiovascular disorders are the leading causes of mortality in patient with end-stage kidney disease (ESKD). Valvular calcification emerges as a significant and frequent complication in ESKD patients. The prevalence of cardiac valve calcification is 47% in hemodialysis (HD) patients and ranges from 32 to 47% in peritoneal dialysis (PD) patients. Valvular calcification correlates with hyperparathyroidism, elevated calcium-phosphorus product, vascular calcification, hypercalcemia and hyperphosphatemia. It is plausible to hypothesize that type of dialysis, hyperphosphatemia, and elevated calcium-phosphorus product could serve as additional risk factors in valvular calcification.

Methods. The research involved 102 patients diagnosed with ESKD who were undergoing maintenance dialysis at least for 6 months at Ghaem, Imam Reza, and Montaserie Hospitals. The eligible participants were those up to 18 years old with stage 3 to 4 of heart failure, while those who had gone under parathyroidectomy are excluded from the study. We used echocardiography to detect valve calcification. A severity score for valve calcification (VC) was determined according to annulus thickness observed through B-mode evaluation. The severity score was categorized as follows: score 0 (< 3 mm), score 1 (3 to 5 mm), score 2 (6 to 7 mm), score 3 (> 8mm). Various factors including age, cause of ESKD, calcium, phosphorus, parathyroid hormone (PTH) levels blood pressure (BP), KTV, Albumin levels, and C-reactive protein (CRP) levels were recorded. Data were subsequently analyzed using SPSS-22 software.

Results. In conclusion, the prevalence of Mitral calcification among hemodialysis (HD) patients was 65.4% while it was 48% among peritoneal dialysis (PD) patients. However, there was no significant association between mitral calcification and dialysis type (P = .109). Similarly, the prevalence of calcification of the aortic valves was 71.2% in HD patients and 64% in PD patients, with no significant association found between aortic valve calcification and dialysis type (P = .527).

This study revealed that the duration of dialysis and age were associated with both aortic and mitral calcification. Additionally, phosphorus, calcium-phosphorus product, and cholesterol levels were found to be associated solely with mitral calcification. Moreover, there was no significant association observed between gender, the reason for ESKD, other laboratory data, and blood pressure with either aortic or mitral calcification according to the findings of this study.

Conclusion. Summary of the research findings: The type of dialysis, gender,

calcium, and parathyroid hormone (PTH) levels were not significantly associated with valve calcification. However, the duration of dialysis and age were found to be associated with valvular calcification. Further and larger studies are needed to clarify the possible reasons behind these associations and to investigate this condition more comprehensively in such patients.

1334 Guillain-Barre Syndrome After Anti-thymocyte Globulin Administration in a Kidney Transplant Recipient

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Introduction. Guillain-Barre Syndrome (GBS) is an acute immune-mediated polyradiculoneuropathy, accounting for an estimated 100,000 new annual cases worldwide. It is typically characterized by progressive ascending symmetrical weakness and areflexia, tending to reach a severe neurological involvement up to 3 weeks after initial symptoms.
Rabbit or equine anti-thymocyte globulin (ATG) is an immunosuppressive drug used in kidney transplant recipients (KTRs) to prevent acute rejection by reducing cytotoxic T-cells. The decreased T-cell response induced by ATG may be rising the likelihood of autoimmune diseases such as GBS. Previously, only a single patient was documented to have developed Guillain-Barré Syndrome (GBS) following Anti-Thymocyte Globulin (ATG) treatment subsequent to a kidney transplant.
Case Presentation. This report describes a rare case of GBS following receiving rabbit ATG after kidney transplantation to prevent acute allograft rejection in a 34-year-old man. The patient presented severe pain in the right temporomandibular joint, fever, chills, myalgia, polyarthralgia, and bone pain. Twelve hours later, he developed quadriplegia, paresthesia, and a limited range of active motions in all extremities. No antecedent viral or bacterial infection was identified. EMG/NCV evaluation displayed acute inflammatory sensory-motor polyneuropathy. After the administration of GBS treatment, the neurologic symptoms started to improve. Over a few days, the reflexes came back completely, and the patient was able to walk.
Conclusion. ATG treatment in renal transplant recipients could be associated with the development of GBS. Physicians should be aware of this significant complication of ATG administration in KTRs and consider autoimmune polyneuropathies such as GBS or CIDP when neurological symptoms appear in patients.

1337 Pulmonary Nocardiosis in Kidney Transplant Recipients: Case Report and Analysis of Sixty Published Cases

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Introduction. Nocardiosis is a rare infectious disease caused by an aerobic, gram-positive, catalase-positive, acid-fast, non-motile bacterium called Nocardia. Therefore, kidney transplant recipients (KTR) are more susceptible to such infection due to receiving immunosuppressive therapy, leading to severe complications. Here, we report a case of pulmonary Nocardiosis in a diabetic patient with a history of kidney transplantation. It was found that early antibiotic therapy, particularly co-trimoxazole, along with modifying the immunosuppressive regimen, could be essential for prognosis.

Case Presentation. A 68-year-old Iranian man with a 7-month history of renal transplantation presented with bilateral pain of the inferior parts of the thorax, mild fever, productive cough, and dyspnea, for 10 days. His past medical history was remarkable for DM, ischemic heart disease (IHD), hypertension (HTN), and hepatitis B. He had the end-stage kidney disease (ESKD) due to DM. The patient was receiving tacrolimus (2 mg twice daily), mycophenolate mofetil (1 g twice daily), prednisolone (20 mg daily), co-trimoxazole (400/80 mg daily), amiodaron, tenofovir and insulin. The initial vital signs were Temperature: 37.4 °C; Heart Rate: 75; Respiratory Rate: 18; Blood Pressure: 130/75. The initial blood tests revealed a WBC: 9100 /mm^3, Hb: 11 g/dL, PIT: count of 230000 /mm3, BUN: 22 mg/dL, creatinine: 1.49 mg/dL, ESR: 75, CRP: 268. A chest CT scan has demonstrated a 45 mm alveolar opacity in left lower lobe with a small satellite lesion, and a ground glass lesion with a severe halo containing air bubble in right lower lobe. Antifungal and antibiotic treatment was started empirically. The immunosuppressive regimen was modified. The broncho-alveolar lavage (BAL) fluid cultures yielded Nocardia. Therefore, the patient's treatment was continued with intravenous injection of co-trimoxazole for a week and previous antibiotics were discontinued. The patient was discharged with instructions to continue therapy with oral co-trimoxazole (400/80 mg BD) along with tacrolimus (1 mg BD), mycophenolate mofetil (500 mg/d), and prednisolone (5 mg/d) for the next 12 months.

Conclusion. Kidney transplant recipients are more susceptible to fungal infection due to receiving immunosuppressive therapy, leading to severe complications. Pulmonary nocardiosis may be present as a common type of localized disease.

1339

Evaluation of Renal Biopsy Samples of Diabetic Patients with Kidney Disease in Imam Khomeini and Golestan Hospitals of Ahwaz from 2013 to 2018

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Introduction. The outcome and treatment of patients with diabetes mellitus (DM), diabetic nephropathy (DN), and non-diabetic renal disease (NDRD) are quite different, so the differential diagnosis is of considerable importance. The utility of renal biopsy in patients with diabetes mellitus is highly debated. However, renal biopsies performed in diabetic patients are increasing in number and complexity. So, in this study, to evaluate the usefulness of renal biopsy in diabetic patients, we examined the histopathological findings of renal biopsies performed on diabetic patients at Imam Khomeini and Golestan hospitals in Ahvaz from 2013 to 2018.

Methods. We retrospectively reviewed specimens from 67 patients with DM who had received renal biopsy from 2013 to 2018 at Imam Khomeini and Golestan hospitals. Data were then compared based on Chi-square and Fisher tests.

Results. The results showed that the most common diagnoses in diabetic patients in renal involvement include DN (alone) (67.2%), DN and acute tubulointerstitial nephritis (7.5%), acute tubulointerstitial nephritis (6%) and membrane glomerulonephritis (6%). In other words, in our study, it was found that 69.2% had diabetic nephropathy, 16.9% had non-diabetic nephropathy and only 13.8% had mixed form. It was also found that the most common classes of nephropathy in the reported cases included class IV (47.9%), III (35.4%) and II (12.5%) and I (4.2%), respectively. It was also found that the frequency of nephropathy in patients was not statistically significant based on age, sex, proteinuria, and hematuria.

Conclusion. According to the obtained results, DN was common in patients with diabetes mellitus. It is necessary to be more careful in selecting diabetic patients for renal biopsy and increase the threshold of renal biopsy in diabetic patients to increase the risk of complications and reduce costs.

1342 The Outcome of COVID-19 in Patients with End-stage Kidney Disease in Razi Hospital, Ahvaz, from February 2020 to May 2021

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Introduction. Patients with end-stage kidney disease (ESKD) are vulnerable to the severe form of COVID-19 due to their older age and comorbidities such as diabetes mellitus and hypertension. In this study, we investigated the outcome of covid-19 in end-stage renal disease patients.

Methods. This was a retrospective study conducted on COVID-19 patients aged 18 years and older referred to Razi hospital in Ahvaz between February 2020 to May 2021 for hemodialysis with the diagnosis of ESKD. Patient information was extracted from their medical records retrospectively.

Results. One hundred and eighty patients were examined. The average age of the patients was 61.5 years; 118 (65.6%) were men. The most common underlying disease was hypertension (81.1%). The most common clinical symptom was shortness of breath (70.6%), followed by cough (47.8%). Seventy-five patients (41.66%) were admitted to the intensive care unit, with an average duration of five days. Hypertension and ischemic heart disease were significantly more common in patients admitted to intensive care unit (ICU) (P = .008 and .015, respectively). In-hospital mortality was 32.8%. advanced age, fever, shortness of breath, cough, and need for ventilator were significantly able to predict mortality in hospitalized ESKD patients with COVID-19 (P = .016, .033, .001, .012, and .011; respectively).

Conclusion. Our study showed ESKD patients with COVID-19 are at high risk for ICU admission and mortality. Advanced age and clinical symptoms of fever, shortness of breath, cough, and need for a ventilator significantly predicted in-hospital mortality in ESKD patients with covid-19.

1347 Factors Associated with Tumor Lysis Syndrome in Children with Hematologic Malignancies

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Introduction. Tumor lysis syndrome (TLS) is a severe complication of hematologic malignancies. Different factors have been considered as risk factors for progression to TLS. Few studies have evaluated the factors that increase the risk of developing TLS in children with hematologic malignancies.

Methods. In a five-year period, children ≤ 18 years with hematologic malignancies in the oncology ward of Dr. Sheikh Hospital, Mashhad, Iran, were assessed for TLS according to the Crigio-Bioshop criteria (2004). The roles of the age, gender, type of tumor, percent of blast cells in peripheral blood smear and bone marrow, serum levels of lactate dehydrogenase (LDH), and white blood cells (WBC) count in the occurrence of TLS were evaluated.

Results. In total, 249 cases were enrolled. Laboratory pre- and post-chemotherapy data were available in 231 and 197 cases, respectively. They included 55.8% boys. The types of tumors included acute lymphoblastic leukemia (ALL) (83.5%), acute myeloid leukemia (AML) (8.4%), Hodgkin and non-Hodgkin lymphoma (each 3.2%), and Burkitt lymphoma (1.2%). The pre-chemotherapy TLS happened in thirty-five cases (15.15%). Of four cases (11.4%) with clinical TLS, one died, and one underwent hemodialysis. The post-chemotherapy TLS happened in forty-three cases (21.8%). Three cases (7%) had clinical TLS, two died and one underwent hemodialysis. The median WBC count and serum LDH levels were significantly higher in cases with pre-chemotherapy TLS compared to those without ($P < .0001$ and .001, respectively). In addition, the percentage of blast cells in the peripheral blood smear was significantly higher in cases with TLS contrary to those without TLS ($P = .038$). Patients with post-chemotherapy TLS were significantly younger than those without ($P = .037$). In addition, the median serum levels of LDH were significantly higher in the first versus the second group ($P < .0001$). Post-chemotherapy TLS was significantly more common in patients with AML compared to other tumors ($P = .028$.)

Conclusion. The median WBC count, serum LDH levels, and percentage of blast cells in peripheral blood smear significantly correlated with the occurrence of pre-chemotherapy TLS. Whereas younger age, the median serum LDH levels, and the type of tumor significantly correlated with post-chemotherapy TLS.

1364 Clinical Manifestations and Laboratory Findings and Mortality Rate of Kidney Transplant Recipients Infected with COVID-19

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Introduction. The emergence of a novel coronavirus (SARS-CoV-2) in late December 2019 and its rapid global spread has led World Health Organization (WHO) to introduce it as an extremely dangerous pandemic. People with underlying disease and a history of organ transplantation are at higher risk for COVID-19 compared with healthy people. In the present study, clinical and laboratory manifestations in patients with COVID-19 with a history of kidney transplantation has been investigated.
Methods. This study was conducted on 103 SARS-CoV-2-positive kidney transplant patients as a descriptive epidemiological study. Clinical and laboratory symptoms of hospitalized renal transplanted patients have been assessed. Statistical analysis of the collected data was conducted using SPSS version 22.
Results. This study consisted of 103 COVID-19 patients with a history of kidney transplantation, of which 64 males (62.1%) and 39 females (37.9%) with an average age of 48.5 ± 13.1 years. The most common clinical manifestations were headache (67%) and shortness of breath (66%). Elevated lactate dehydrogenase (LDH) levels, erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP) have been observed in 100%, 98.1% and 93.2% of patients, respectively. In 12.6% and 41.7% of patients, the degree of lung involvement was above 75% and 50 to 75%, respectively. Moreover, 79.6% of patients has been discharged after improvement, while 20.4% of patients died.
Conclusion. Our research indicates that kidney transplantation is associated with a higher risk of COVID-19-related mortality compared to the general population.

1365 Investigating the Relationship Between Serum CRP Level and the Type of Dialysis Filter Used in Chronic Hemodialysis Patients

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Introduction. The incidence of kidney failure is increasing and hemodialysis is the primary maintenance treatment for kidney failure; however, the hemodialytic and purification procedure provokes inflammation. Hence, identifying the affecting mechanisms in patients with kidney failure is required to develop practical approaches for averting hemodialysis complications. This study was conducted to investigate the correlation between C-reactive protein (CRP) serum levels and the type of dialysis filter used in chronic hemodialysis patients at 22 Bahman Hospital, Mashhad, Iran, during the year 1401.

Methods. This cross-sectional study was conducted on chronic hemodialysis patients. Only the patients who met the inclusion criteria and signed the informed consent form were included in the study. Subsequently, blood samples were collected from the patients and sent to 22 Bahman Hospital's laboratory for analysis. The findings of the tests and demographic information of the patients were statistically analyzed by the SPSS version 22.

Results. The study investigated 30 chronic hemodialysis patients, aged 33 to 85 years with an average age of 63.37 ± 14.18 years. Females constituted 56.7% of the sample. All participants had comorbidities. A statistically significant correlation ($P < .05$) exists between the rise of serum CRP level and the shift from high-flux to low flux dialysis fluidity, as well as the fall of serum CRP level and the change from low flux to high flux dialysis fluidity.

Conclusion. Our findings showed the use of high flux dialysis filter is effective in lowering inflammatory biomarkers such as CRP and reduces the hemodialysis complications.

1367 Sleep Disorders in Patient with ESKD and Its Association with Residual Renal Function

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Introduction. Sleep disorder is an important common complication in hemodialysis patients and is characterized by disrupting patterns or behaviors related to sleep. However, the relationship between sleep quality and residual kidney function is still unclear. Residual renal function in dialysis patients is significantly related to the overall health of the patient so that not only makes clearance of small particles possible but also shows a strong inverse relationship with calcification of heart valve and its hypertrophy in dialysis patients. Reduction of the residual renal function also contributes significantly to anemia, inflammation, and malnutrition in patients under dialysis. Therefore, this study aimed to investigate this relationship.

Methods. In this analytical cross-sectional study, 225 patients who referred to dialysis centers affiliated to Guilan University of medical Sciences, Rasht, Iran, were studied and classified into two groups with and without residual kidney function. The Pittsburgh Sleep Quality Index questionnaire was used to assess sleep quality. Multiple linear regression was used to determine the factors affecting sleep quality. The significance level considered as $P < .05$.

Results. The mean age of patients was 58.23 ± 13.50 years. 58.7% of patients were male. The issue of serious and profoundly serious sleep disorders regarding latency and duration has been greater than other components. Seventy-two percent of hemodialysis patients had poor sleep quality. In the multiple linear regression model, age (β = 0.442, 95% CI: 0.096 to 0.788), sex (β = -0.847, 95% CI: -1.641 to -0.054), Body Mass Index (β = 0.153, 95% CI: 0.058 to 0.249) and dialysis duration (β = 0.097, 95% CI: 0.002 to 0.192) were independently and significantly associated with sleep quality score. But there was no statistically significant relationship between sleep quality and residual kidney function.

Conclusion. In conclusion, poor sleep quality is quite common in patients undergoing hemodialysis. Therefore, sleep disorders in hemodialysis patients should be considered as one of the most challenging problems by health care providers and early diagnosis and intervention are essential to improve sleep quality.

1369 Acute Kidney Injury Due to Contrast Agent and Biomarkers such as Copeptin

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Introduction. Contrast-induced nephropathy (CIN) is a common problem which incidence is about 10-15% among patients who have undergone coronary angiography. The pathophysiology of CIN is still unclear, but a combination of hypoxic and toxic injury due to Reactive oxygen species (ROS) production by Medullary hypoxia, increases in oxidative stress, and decreased nitric oxide bioavailability have been suggested. Also, contrast administration reduces renal flow by increasing vasoconstriction in the renal arteries. Copeptin (The C terminal part of the arginine vasopressin precursor) might be a potential biomarker to predict the outcomes of adverse cardiac and renal events. In this regard, the present study aimed to assess the association between copeptin levels and contrast-induced nephropathy.

Methods. This cross-sectional study was conducted in Heshmat Hospital, the referral heart academic hospital in the north of Iran. A total of seventy-five patients eligible for (PCI) or angiography was prospectively enrolled in this study. The blood sample test was taken daily to identify changes in serum creatinine level and the other biomarkers such as copeptin and to detect CIN occurrence within 48 to 72 hours after contrast media administration. Also, the Ethical Research Committee approved code is IR.GUMS.REC.1398.411.

Results. The 48-hour follow-up after the procedure revealed increased blood urea nitrogen (BUN) levels in 8% and increased serum creatinine levels in 5.33% of patients. There was no relation between contrast-induced nephropathy development and copeptin. Our results showed no statistically significant association of copeptin levels with increased serum creatinine and decreased glomerular filtration rate (GFR). Although, copeptin levels at admission, as well as hyperlipidemia, were independent predictors of increased serum creatinine and decreased GFR. the multivariate analysis showed that copeptin levels at admission, as well as hyperlipidemia, were independent predictors of decreased GFR after exposure to contrast media.

Conclusions. In conclusion, the serum copeptin level could be introduced as a simple prognostic biomarker for serum creatinine elevation and GFR decrease after contrast medium administration during coronary angiography or percutaneous coronary intervention.

1376 Association Between Left Ventricular Hypertrophy and Vascular Calcification in Hemodialysis Patients

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Introduction. Left ventricular hypertrophy (LVH) is frequent in hemodialysis (HD) patients and is an independent risk factor for adverse cardiovascular events and mortality. LVH is associated with abdominal aortic and cardiac valve calcification in HD patients. The aim of this study was to investigate the association between LVH and vascular calcification (VC) in a group of HD patients.

Methods. Thirty-one HD patients were included in this cross-sectional study at Valiasr Hospital in Ghaemshahr. We recorded laboratory and demographic data from medical files of patients. We used plain lateral abdominal radiography for assessment of abdominal aortic calcification and cardiac echocardiography for cardiac valves (aortic and mitral valve) calcification (as indices of VC) and LVH.

Results. Thirty-one HD patients including eighteen women (58.1%) were enrolled in this study. The mean age of the patients was 60.1 ± 13.6. Twenty-four (77,4%) of patients had abdominal aortic calcification, 23 (74.1%) of them had heart valve calcification and 15 (48.3%) patients had LVH. There was no significant correlation between the serum levels of calcium, phosphorus, hemoglobin, and cholesterol with LVH (P = 0.8, 0.3, 0.9, 0.4; respectively). There was no correlation between LVH with abdominal aortic calcification (P = .362) and heart valves calcification (P = .353). Fifteen (48,3%) patients were diabetic. A significant correlation was observed between diabetes mellitus and LVH (P = .025).

Conclusion. We did not find any correlation between abdominal aortic and heart valves calcification and LVH in HD patients. But diabetes mellitus was significantly correlated with LVH. The obtained results could potentially be influenced by the limited sample size. Also, It seems that the traditional risk factors are the main predictors of LVH. Further studies need to highlight other factors.

1381 Hyperkalemia in Hemodialysis Patients Treated with Angiotensin Converting Enzyme Inhibitors and Angiotensin Receptor Blockers

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Introduction. Hypertension (HTN) is prevalent in hemodialysis (HD) patients (86%). The main causes of HTN are volume expansion, sodium retention, renin angiotensin system and sympathetic overactivity. In this regard, we use angiotensin converting enzyme inhibitors (ACEI) and angiotensin receptor blockers (ARB) to manage HTN in HD patients frequently. ACEI and ARB drugs are useful to reduce left ventricular hypertrophy and proteinuria and maintaining residual renal function. But hyperkalemia is an adverse effect of these drugs especially in HD patients due to decreased urinary excretion of potassium. This study was an attempt to evaluate the frequency of hyperkalemia in HD patients treated with ACEI and ARB.

Methods. Ninety-four HD patients who underwent hemodialysis three times a week for at least three months were included in this study in Valiasr hospital in Ghaemshahr for a year (2019 to 2020). The dialysis solution that was used in all of the patients contained 2 meq of potassium. Demographic and laboratory data and ACEI or ARB usage were collected from medical files and filling checklist. The mean of twelve-monthly serum potassium concentration was calculated.

Results. We studied 94 HD patients with the mean age of 58.8 ± 12.4 years (34 -83), and 55 patients (58.5%) were male. The mean duration of HD was70.3 ± 14.3 months. Thirty-five patients (37.2%) were diabetic. The mean serum potassium was 5.49 ± 0.54 meq/L. Twenty-five patients (26.1%) were on ARB and only one patient was on ACEI. There was no significant difference in serum level of potassium between ARB or ACEI users with nonusers (P = .95). Only two patients had hyperkalemia (2.1%). There was no significant difference in mean age, gender, dialysis vintage, adequacy of dialysis (based on kt/v and urea reduction ratio), use of beta-blockers and furosemide between ARB and ACEI users with nonusers (P = .63, .55, .88; (0.99 to 0.13), (0.67 to 0.75).

Conclusion. In this study, we found no significant difference in serum potassium level between ARB or ACEI users with nonusers. Usage of these drugs are safe in HD patients and the risk of hyperkalemia is not more than other patients which might be due to dialysis solution potassium level of two meq.

1383 Acute Kidney Injury (AKI) Caused by Spontaneous Tumor Lysis Syndrome in A Patient with Multiple Myeloma Presenting with An Extramedullary Presacral Plasmacytoma

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Introduction. Multiple myeloma is a type of plasma cell neoplasia characterized by the excessive proliferation of plasma cells, which results in the overproduction of monoclonal immunoglobulins. Kidney dysfunction in multiple myeloma often arises from conditions such as light chain cast nephropathy (referred to as myeloma kidney) and hypercalcemia. Spontaneous tumor lysis syndrome (TLS) is a rare occurrence in the context of multiple myeloma and is seldom the primary cause of acute kidney injury (AKI). In this case, we present a 59-year-old man diagnosed with multiple myeloma and a presacral plasmacytoma, who developed AKI as a result of spontaneous tumor lysis syndrome.

Case Presentation. A 59-year-old man came to the hospital with symptoms of oliguria, extreme fatigue, abdominal pain, and constipation, which had been ongoing for four days. During the initial medical assessment, abnormal laboratory results were identified. These included elevated levels of serum urea and creatinine, along with hyperphosphatemia, hypocalcemia, hyperkalemia, hyperuricemia, and an increased LDH level. These findings led to the diagnosis of tumor lysis syndrome (TLS). A subsequent abdominopelvic computed tomography (CT) scan revealed the presence of a soft tissue mass measuring 145 × 85 × 60 mm located in the presacral and pre-coccygeal area. Following an evaluation, an excisional biopsy of the mass and a bone marrow biopsy were conducted. The diagnosis of multiple myeloma was subsequently confirmed based on several factors, including the presence of monoclonal gammopathy in serum protein electrophoresis and pathological findings that indicated the infiltration of fibroconnective tissue by abnormal plasma cells. These plasma cells tested positive for CD138, CD56, and Kappa in the immunohistochemistry (IHC) study. Additionally, clonal bone marrow plasma cells were found to be present at levels exceeding 10 percent. In response to the diagnosis, the patient received treatment with Rasburicase and underwent hemodialysis. Subsequently, the patient was referred to a hematologist-oncologist for further treatment and management.

Conclusion. Spontaneous TLS in the context of multiple myeloma can lead to AKI.

1386 Comparative Analysis of Spirometric Parameters in Hemodialysis and Peritoneal Dialysis Children

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Introduction. Patients with chronic kidney disease suffer from respiratory disorders that improve with dialysis. The effects of dialysis on the recovery of these abnormalities are unclear. The aim of this study was to compare spirometric parameters in children undergoing hemodialysis and peritoneal dialysis.

Methods. This cross-sectional study was conducted on children with end-stage renal disease undergoing hemodialysis and peritoneal dialysis referred to Dr. Sheikh Pediatric Hospital of Mashhad (affiliated with the Mashhad University of Medical Sciences, Razavi Khorasan, Iran) in June and July of 2019. Patients underwent spirometry before and after dialysis and the collected data were analyzed by the SPSS version 16 using the independent t and paired t tests with a significance level at $P < .05$.

Results. In this study, 16 patients were assigned to the hemodialysis group and 18 patients were assigned to the peritoneal dialysis group. The two groups were matched in terms of sex, age, height, weight, and hemoglobin level. A comparison of pre- and post-dialysis spirometric parameters showed a significant increase in relative Forced Vital Capacity (FVC) in both groups (hemodialysis: from 71.2 ± 13.5% to 75.9 ± 13.4% ($P = .026$) and peritoneal dialysis: from 67.0 ± 11.2% to 71.6 ± 11.6% ($P = .012$). There was no significant difference in the percentage of changes in spirometric parameters after dialysis in hemodialysis and peritoneal dialysis patients.

Conclusion. The results of this study showed that dialysis is associated with improved respiratory indices in patients with end-stage renal disease undergoing dialysis. Furthermore, the effects of peritoneal dialysis and hemodialysis on changes in lung function tests were similar.

1390 Apium Graveolens and Blood Pressure: A Review Study

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Introduction. Hypertension is a chronic disorder characterized by elevated systolic and/or diastolic blood pressures. In recent years, there has been growing interest in exploring alternative therapies for managing hypertension, including the utilization of medicinal plants. Apium graveolens, commonly known as celery, has been long used in traditional medicine for various health benefits. This systematic review aims to assess the effects of Apium graveolens on blood pressure, exploring the existing literature to provide an evidence-based evaluation of its potential impact.

Methods. A comprehensive search strategy was conducted in electronic databases, including PubMed, SCOPUS, and Web of Science to identify relevant studies published until 2023. Studies investigating the effects of Apium graveolens on blood pressure were included. Two reviewers independently performed data extraction and quality assessment.

Results. A number of studies met the inclusion criteria. The studies comprised a diverse range of populations and interventions, including Apium graveolens extracts, juices, or supplements. The results consistently showed a significant decrease in blood pressure levels following Apium graveolens consumption. The mechanism behind this hypotensive effect is primarily attributed to the presence of bioactive compounds such as phthalides, flavonoids, and potassium in Apium graveolens.

Conclusion. This systematic review suggests that Apium graveolens holds promising potential as a natural intervention for blood pressure management. The available evidence indicates a significant reduction in blood pressure levels following the consumption of Apium graveolens extracts, juices, or supplements. However, further well-designed RCTs are warranted to establish optimal dosage, duration, and long-term effects of Apium graveolens on blood pressure regulation.

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The Effect of 10 Weeks of Aerobic-resistance Exercise Training on Liver Enzymes (ALT, AST, and ALP) and Kidney Function (Creatinine, Urea, and GFR) of Kidney Transplant Patients

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Introduction. Kidney transplantation is the treatment of choice for most patients with advanced kidney failure. But despite its numerous benefits, after the transplant operation, patients still face a lot of new problems, including imbalances in liver enzymes and kidney function. The use of non-pharmacological methods such as exercise can be particularly important to reduce complications and problems after transplantation. The purpose of this study was to investigate the effects of 10 weeks of aerobic-resistance exercise training on liver enzymes (ALT, AST, and ALP), kidney function (serum creatinine (SCr), urea (BUN), and GFR) of kidney transplant patients.

Methods. In this quasi-experimental study, 50 kidney transplant patients (age = 36.25 ± 2.15y, BMI = 32.7 ± 0.8 kg/m^2, history of kidney transplant = 10.43y, Wt = 62.40 ± 3.22) referred to Namazi Hospital, Shiraz, without any movement restrictions, were voluntarily selected and randomly divided into two exercise training (30 people) and control (20 people) groups. The participants in the exercise group did their aerobic exercise (40 to 70% HRMAX)-resistance (45 to 65% RM) for ten weeks, three days a week and each session lasts 60 to 90 minutes. Blood samples were collected from the study participants to measure liver enzymes (ALT, AST, ALP), urea and creatinine in the first session and 24 hours after the last training session. GFR was also calculated using the following formula:

eGFR (mL/min) = [(140 – age) × Wt / (0.814 × S.Cr in μmol/L)] × (0.85 if female)

A two-way analysis of variance test was used to compare groups, and dependent t-test was used for intra-group changes at a significance level of $P < .05$.

Results. The results indicated a decrease of 5, 6, and 4.5% in creatinine ($P = .01$), urea ($P = .03$) and GFR ($P = .07$) and no significant change in liver enzymes ($P < .0\ 05$) in the training group compared to the control group.

Conclusion. Ten weeks of aerobic-resistance exercise training with the recommended intensity and duration cannot improve the liver enzymes in kidney transplant patients, but it can be effective in improving the kidney function and thus improve their health.

1406 The Outcome of Pauci-immune Crescentic Glomerulonephritis and its Prognostic Factors: A single Center Case Series

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Introduction. Pauci-immune crescentic glomerulonephritis (GN) is the most common cause of rapidly progressive GN in adults. The aim of this study was to determine the outcome of patients with pauci-immune crescentic GN and risk factors of the development of end-stage kidney disease (ESKD) in these patients.

Methods. This case series study was carried on 120 patients with pauci-immune crescentic GN biopsied in Hasheminejad Kidney Center betwen 1998 and 2016. Inclusion criteria were age > 16 years, at least one crescentic glomerulus, maximally 1+ deposition of immunoglobulins and complement at fluorescent microscopy, and at least 6 months follow-up. The main outcomes were ESKD and death.

Results. The study population included 120 patients with pauci-immune crescentic GN (mean age was 47 ± 17 years and 49.1% male). There was no significant difference in outcome between patients with diffuse or focal crescentic GN. Seventy-two patients (60%) developed ESKD and 31 patients (25.8%) died. Need for dialysis at presentation, lower baseline hemoglobin and GFR and GFR at four months and a high percentage of glomerulosclerosis and interstitial fibrosis had a significant relationship with low kidney survival ($P < .05$). The rate of ESKD was higher in patients who did not receive cyclophosphamide therapy, due to focal crescentic GN or high chronicity, compared to patients who received it (70.7 vs. 28.5%, $P < .001$).

Conclusion. In this study, a high percentage of patients with pauci-immune crescentic GN developed ESKD. Low first GFR and high chronicity in biopsy were associated with lower kidney survival. Failure to administer cyclophosphamide in seeminlgy limited or advanced cases, together with late referral may have led to poor prognosis.

1412 Prevalence of Kidney Injury in Seriously Ill Children

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Introduction. A significant number of patients hospitalized in intensive care units (ICUs) face kidney dysfunction during hospitalization. In the present study, we aimed to evaluate the occurrence of this event in pediatric patients hospitalized in ICUs and also its impact on the outcomes related to patients.

Methods. In this prospective observational study we investigated the incidence of acute kidney Injury in patients admitted to pediatric ICU in a tertiary pediatric hospital in Iran between September 2021 to August 2022. Patients who developed AKI during their ICU stay were included in the study. The clinical and laboratory data were collected at admission and then on a daily basis to characterize differences in etiology, illness severity, and clinical practice, and to determine the impact of these items on patient outcomes.

Results. Of 1005 patients admitted to pediatric ICU, 49 patients suffered from acute kidney injury during hospitalization leading to an incidence of 4.3% for kidney injury. Out of those, recorded information was accessible for 46 patients who were ultimately included in the final analysis. 45.7% of the patients were classified as having stage I acute kidney injury, while 19.6% were classified as stage II, and 34.8% were classified as stage III. Ultimately, 39.1% of the patients died due to different causes. Deceased individuals were administered a higher number of antibiotics, mainly aminoglycoside and antifungal medications, in comparison to patients who survived. Also, resuscitation on admission was more recorded in deceased ones.

Conclusion. In total, 4.3% of patients hospitalized in ICU face acute kidney injury, with half of these cases occurring within 24 hours of hospitalization. About a third of patients died, primarily observed in patients received resuscitation during hospitalization or those prescribed numerous antibiotics and antifungal medications.

1422 Evaluation of COVID-19 Infection Severity and Its Outcome in Kidney Transplant Patients Referred to Hashemi-nejad Kidney Center

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Introduction. Coronavirus disease 2019 (COVID-19) is a highly contagious. Common clinical presentations are respiratory and cardiovascular, neurological, renal, and gastrointestinal. Cytokine storm syndrome and coagulation disorders have also been reported and are disease severity index. The World Health Organization (WHO) classified COVID-19 severity into mild, moderate and severe. Old patients and those with underlying conditions including chronic lung or heart or renal disease and immunosuppressive patients are at risk for severe infection and high mortality.

Methods. This retrospective observational study was conducted on kidney transplant patients who referred to Hashemi-nejad kidney center in Tehran with COVID-19 infection between March 2019 to February 2021. Patients are divided into three groups based on disease severity. Chest CT scan and nasopharynx PCR test were taken at the beginning of the visit in all patients. Other required tests were extracted from the hospital's HIS system. All discharged patients had tele- follow up in terms of kidney function and mortality within 6 months.

Results. In this study, 108 patients with covid-19 were studied. The average age was 48.6 years (means = 45.9 to 51.3, 95% CI). 68 patients (63%) were male and 40 patients (37%) were female.

$$\frac{male}{female} ratio = 1.7$$

14.8% of patients did not use any medications and 37 (34.3%) patients had three medications at the same time. 29 (26.9%) patients had no clinical symptoms related to covid-19 and the most common symptoms were fever in 50% of cases, cough in 33.3% of cases, and body pain in 29.6% of cases. 11.1% of patients needed intubation. The most common medication was remdesivir and dexamethasone (about 68% of cases). 5% of patients experienced mild covid disease, 40.7% of patients moderate and 35.8% of patients severe disease. 13.9% of patients with covid 19 died and the most common complication was weakness in 6.5% of cases. One patient had graft loss and one patient had proteinuria in follow up. Patients were treated with favipiravir and ivermectin had statistically significant difference in outcome. There was no statistically significant difference in outcome in term of immunosuppression.

Conclusion. In conclusion, there was no significant difference in outcome in term of immunosuppression in kidney transplant patients.

1435 The Effect of Fingolimod on Ischemic Kidney Injury in A Rat Model

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Introduction. Ischemia/reperfusion injury (IRI) is a leading cause of acute kidney injury (AKI) that induces inflammation and oxidative stress. The main goal of the current study was to assess the impact of fingolimod on kidney IRI in rats.

Methods. For this purpose, 18 male Wistar rats (220 to 250g) were divided into three groups including: (i) Sham, (ii) I/R, and (iii) fingolimod + I/R. The last group was pretreated with a single dose of fingolimod (1 mg/kg) (intraperitoneal injection) before induction of the I/R injury. Kidney function, oxidative stress marker (malondialdehyde), and antioxidant markers (catalase, superoxide dismutase, glutathione, glutathione peroxidase, and total antioxidant capacity) were determined in the kidney tissue of the rats. Moreover, kidney samples were taken for histological analysis.

Results. Fingolimod pre-treatment could significantly improve the glutathione peroxidase ($P < .01$) and glutathione ($P < .001$) activities along with the total antioxidant capacity levels ($P < .001$) when compared to the I/R group. Moreover, significant recovery of kidney function and histology was seen in the fingolimod + I/R group compared to the I/R group ($P < .01$).

Conclusion. Fingolimod pretreatment could improve renal function, antioxidant capacity, and histological alterations after I/R injury. Hence, it might protect the kidney against IRI-related kidney damage including AKI and transplantation.

1437 Evaluating the Incidence of Acute Kidney Injury and Survival Rate in Hospitalized COVID-19 Patients with Underlying Kidney Disease

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Introduction. Coronavirus Disease 2019 (COVID-19) manifests as a multisystem disease, with potential impacts on both kidney function and patient outcomes. This study aimed to assess the influence of Acute Kidney Injury (AKI) on the long-term rates of patient and kidney survival in hospitalized individuals with pre-existing kidney conditions.

Methods. This was a retrospective cohort study on 406 hospitalized patients with COVID-19, which were divided into four groups: without underlying kidney disease, with chronic kidney disease (CKD), with kidney transplant (KT), and on maintenance hemodialysis (MHD). Demographic and laboratory data were collected from the hospital health information system and the patient follow-up after discharge was performed through phone call. We assessed frequency and risk factors of AKI and its impact on the kidney and patient survival.

Results. In this study population, there were 249 (61.3%) men and 157 (38.7%) women, with a mean age of 56.2 ± 2.4 years. Among these, 35.2% were without underlying kidney disease, 37.7% with CKD, 14.3% with KT, and 12.8% on MHD. The overall incidence of AKI was 50.7%, with the highest rate among CKD (67.3%) and KT groups (80.7%). Risk factors of AKI were hyponatremia, severity of COVID-19, baseline serum creatinine, proteinuria, diabetes mellitus, higher age, and male sex. Overall mortality rate was 18.9% with the highest rate among KT patients (28.5%). Mortality risk factors included age, severity of COVID-19, AKI, and high lactate dehydrogenase levels. Within 90 days after discharge, no new kidney loss or death occurred.

Conclusion. Patients with CKD and KT have the highest risk of AKI during COVID-19. The main complications and mortality often occur during hospitalization, necessitating close care during this critical period.

1445 Cyclosporine vs. Tacrolimus: A Single-center Experience on the BK-virus Infection in Kidney Transplant Recipient

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Introduction. The contribution of calcineurin inhibitors in the development of BK-virus infection is one of the long-standing dilemmas in transplantation medicine. Some authors believe that cyclosporine has preventive advantages, however, there are still a lot of unresolved inquiries. This study aimed to compare the incidence of presumptive BK polyomavirus–associated nephropathy (BKVAN) in kidney transplant recipients (KTRs) receiving tacrolimus rather than cyclosporine.

Methods. In this single-center cross-sectional study, the KTR patients (n = 110) who received kidney allografts in Shahid Modarres Medical Center, Tehran, Iran between 2017 and 2021 were included. The patients received conventional pre- and post-transplant treatment and were randomized to either tacrolimus or cyclosporine groups. The standard post-transplantation screening protocol was scheduled according to the KDIGO 2009 guidelines. The incidence of presumptive BKVAN (> 10^3 viral copies /mL) was measured by the plasma nucleic acid amplification tests and compared between the two groups by means of student T-test.

Results. Forty-nine (44%) KTR patients received cyclosporine and 61 (55%) received tacrolimus. Mean age, male to female ratio, the causes of end-stage kidney disease, history of blood transfusion, history of pre-transplant steroid and immunosuppressive treatment and the rate of delayed graft function were not significantly different between the two groups ($P > .05$). However, significant differences were found in the case of the type of donor (85.2% deceased-donor in tacrolimus group), blood group of the KTR patients and the history of post-transplant anti-thymocyte globulin (100 % in tacrolimus group; $P < .05$). The KTR patients on tacrolimus had lower glomerular filtration rate at the time of discharge (49.1 vs. 57.2 mL/min/ 1.73m^2; $P < .05$). Notably, the incidence of presumptive BKVAN was not significantly different between the groups (19.7 % in tacrolimus vs. 10.2% in cyclosporine; $P > .05$). In addition, the 2-year graft function was comparable between the two groups ($P > .05$).

Conclusion. Our research indicates that the occurrence of BKVAN was similar among kidney transplant recipients who were treated with different types of calcineurin inhibitors (i.e., cyclosporine and tacrolimus).

1448 Clinical Outcomes of Remdesivir in COVID-19 Patients with Acute Kidney Injury or Chronic Kidney Disease: a Randomized Clinical Trial

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Introduction. Remdesivir is an RNA polymerase inhibitor approved for the treatment of moderate to severe Coronavirus Disease 2019 (COVID-19); however, it has not yet been authenticated to apply to patients with acute kidney injury (AKI) or chronic kidney disease (CKD). Regarding some positive results obtained from previous studies, we aimed to evaluate the efficacy and safety of remdesivir in COVID-19 patients with severe renal impairment.

Methods. In a randomized clinical trial, remdesivir was added to the standard regimen of treating COVID-19 patients with AKI or CKD; 200 mg remdesivir was given on the first day of hospitalization to fifty patients followed by 100 mg every other day until resolution of the symptoms. Clinical and paraclinical evaluation was performed daily and the findings were compared with the fifty patients on standard treatment regimen.

Results. The rates of intensive care unit (ICU) admission (P = .02), and mortality (P = .007) were significantly reduced in patients who received remdesivir. Moreover, a substantial decrease of aspartate transaminase (AST) (P = .004), lactate dehydrogenase (LDH) (P = .004), ferritin (P = .007), erythrocyte sedimentation rate (ESR) (P < .0001), alkaline phosphatase (ALP) (P = .006) were observed in the patients receiving remdesivir compared to the baseline values which was absent in case of non-remdesivir group. No serious side effects were observed, except for one patient who showed elevated liver enzymes.

Conclusion. Remdesivir appears to be well tolerated in patients with AKI or CKD. The administration of this medication leads to a decrease in mortality and the need for ICU admission. Additionally, it brings about improvement in both clinical and paraclinical aspects of COVID-19 patients.

1449 Association Between Depression and Serum Interleukin-6 Level Patients on Dialysis

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Introduction. Patients undergoing hemodialysis are at risk for developing depression. Recent investigations have shown the significance of inflammatory cytokines in the development of depression in these individuals. The aim of this study was to investigate the relationship between serum interleukin-6 (IL-6) and depression in hemodialysis patients.

Methods. This cross-sectional study was performed during 2021 in dialysis centers affiliated to Mashhad University of Medical Sciences, Iran. Patients with end-stage kidney disease (ESKD) undergoing hemodialysis for at least one year were assessed for depression using the Beck Depression Inventory. Serum IL-6 levels were also measured using ELISA kit before dialysis. Data were analyzed with SPSS 16 software and the relationship between depression level and serum IL-6 level was investigated at a significance level of $P < .05$.

Results. A total of 64 patients undergoing hemodialysis were included in this study of which 32 patients had depression and 32 did not have depression. There was no difference between mean age ($P = .76$), sex distribution ($P = .99$), underlying cause leading to ESKD ($P = .72$). Comparison of biochemical parameters in patients with and without depression showed that there is no significant difference in term of urea reduction ratio (URR) ($P = .31$), serum calcium ($P = .98$), hemoglobin ($P = .46$), serum albumin ($P = .39$), blood sugar ($P = .97$) and serum iron ($P = .23$) levels between the two groups. The median serum PTH level was 475 pg/dL in patients without depression and 283 pg/dL in depressed patients ($P = .03$). The median serum IL-6 level in patients undergoing hemodialysis with depression was significantly higher than patients without depression [40 (53) vs. 21 (50.2) pg/mL, $P = .04$].

Conclusion. The results of this study showed a higher level of IL-6 in hemodialysis patients with depression. IL-6 may be involved in the pathogenesis of depression in patients with ESKD.

1453 The Effect of Rituximab in Children with Steroid Dependent Nephrotic Syndrome

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Introduction. Nephrotic syndrome is one of the most common kidney diseases in children around the world. The most common form is steroid sensitive nephrotic syndrome (SSNS), but in many cases they are steroid dependent (SDNS) that causes problems. Rituximab is a type of monoclonal antibody against CD20 that is used for the treatment of kidney diseases. Due to the limited availability of research on the subject in Iran, we aimed to address this gap by conducting a study on the impact of treatment on SDNS to reduce relapses in children diagnosed with the disease.

Methods. This was a cross-sectional study. In one group of the SDNS patients, we used rituximab in four doses after failure to respond to levamisole. Totally, sixty patients with SDNS (30 cases in the rituximab treated group and 30 cases in the non-rituximab group) who were visited Mofid Children's Hospital, Tehran, Iran, in the past two years were included in the study and examined, and the investigated variables were extracted from the patients' files, and then the analysis of these data and the relationship between the variables were conducted.

Results. The results of the study showed that the number of relapses in the non-rituximab group was significantly higher than the treatment group. The duration of remission in the Rituximab group was 1.03 years, which was equivalent to an average of 12.44 months. Also, the results of the study showed that the number of relapses in the rituximab group was significantly lower than the non-rituximab group. The average difference of the treatment period in two groups of SDNS was not statistically significant. There was also no significant relationship between the use of rituximab and gender. In addition, there was a significant relation between the treatment period and age, weight, height, and duration of the disease. Among the quantitative variables, the difference in the mean of the variables (weight, Alb1, Alb2, Ca, Alp, TG) between the two groups is statistically significant.

Conclusion. In general, there is widespread interest in the use of rituximab in children with SDNS. The results of our study support the efficacy of rituximab for these children, with longer relapse-free survival, fewer relapses, and increased remission rates.

1455 BK Virus in Kidney Transplantation

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BK Polyomavirus (BKPyV) is a non-enveloped double- stranded DNA virus that is a member of polyoma subgroup of papova viruses, which includes JC virus and SV40. Infection with BK virus (BKV) is common in the general population, with an estimate of seropositivity in adults by 80 to 90%. After resolution of primary infection (resembling common cold), BKV remains latent most notably within the genitourinary system. During immunosuppression, the virus may become reactivated and begin to replicate. but only 10 to 15% of patients developed viremia. BKV replication starts and progresses through detectable stages: Viruria, Viremia, and then Cause Nephropathy (interstitial nephritis) and (ureteral stenosis). BKV nephropathy (BKVN) leads to the loss of about 3 to 5% of allografts. Transplant kidney biopsy remains the gold standard for diagnosing BKVN. There is no definitive treatment for BKV infection including BKV nephropathy, except immunosuppressive reduction.

Although JC virus (JCV) inhabits in the uroepithelium it may be reactivated during the periods of immunosuppression. It rarely causes nephropathy but could lead to progressive multifocal leukoencephalopathy.

Laboratory tests for finding BKV vary from finding decoy cells in the urine (sensitivity 100%, specificity 45%), to measure the BK viral load in the urine and blood. However, measuring BK viral load has a higher value (sensitivity 100%, specificity 66 to 90%) depending on viral load more than 10,000 copies/mL in blood.

Polyomavirus infection could occur at any time post-transplantation and cause an increase in plasma creatinine level silently. Risk factors for BKV reactivation like intense immunosuppression, use of tacrolimus and thymoglobulin, diabetes mellitus and HLA mismatch are most important. BK polyomavirus replication in renal tubular epithelial cells is inhibited by Sirolimus but activated by Tacrolimus through a pathway involving FKBP-12.

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