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Hyponatremia in Acute Urinary Tract Infection

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Introduction. Acute pyelonephritis is a common bacterial disease in children. Disturbances of serum electrolytes associate with acute pyelonephritis. We retrospectively reviewed the medical records of children with urinary tract infection.

Methods. 84 children with urinary tract infection that were referred to pediatric office and hospitals in Jahrom (Iran) during April 2005 to December 2006 were studied. Charts were reviewed to determine patients' laboratory data including serum sodium (Na), potassium (K), creatinine, and blood urea nitrogen and kidney sonography.

Results. 82 children mean 13.3 ± 17 months (range 1 month to 7 years) were studied. 23 patients had pyelonephritis. 28.7% of patients had hyponatremia. Serum Na levels of children with acute pyelonephritis were significantly lower than cystitis (136.5 ± 3.8 versus 138.9 ± 4.5 ; $P = .023$).

Conclusions. Mild hyponatremia and hyperkalemia are seen in acute pyelonephritis without consideration of age or renal abnormality and have high specificity.

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Angiotensin Converting Enzyme Gene Polymorphism Among Iranian Children With Focal Segmental Glomerulosclerosis

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Introduction. Idiopathic focal segmental glomerulosclerosis (FSGS) is one of the most common glomerular diseases leading to end stage renal disease (ESRD) in children. These patients show different rate of progression. Angiotensin converting enzyme (ACE) gene insertion/deletion (I/D) polymorphism has been studied as a predictor of progression of renal diseases including FSGS. However, the studies have controversial results. There is no study available from our country to date to find out any correlation of ACE gene polymorphism and rate of progression in FSGS children. In this study, we investigated its role in the rate of progression of FSGS.

Methods. Forty-one children aged 1 to 18 year old admitted at St Alzahra hospital, Isfahan, Iran with biopsy proven idiopathic FSGS. They were divided into two groups according to the time of progression to renal death. Renal death was defined as glomerular filtration rate (GFR) less than $50 \text{ ml/min/1.73 m}^2$ or decreasing GFR more than two times compared to the baseline. Reaching renal death in less or more than two years was assumed as rapid progressors (RP) or slow progressors (SP), respectively. The intron 16 of ACE gene was amplified by PCR technique. Statistical significance was regarded as $P < .05$.

Results. Twenty-eight patients were male and 13 were female. In 15 RP patients the genotype distribution was DD-26.6%, II-6.6%, ID-66.6%. In 26 SP patients the genotype was similar (DD-38.4%, II-7.6%, ID-53.8%, $P > .05$).

Conclusions. We could not show any significant difference between gene polymorphism and rapidity of progression in FSGS.

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Assessment of Hydrochlorothiazide in Reducing Chronic Relapsing Abdominal Pain in Girls With Idiopathic Hypercalciuria

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Introduction. Chronic and relapsing abdominal pain is one of the most common reasons that bring children to pediatric clinics. About 20% of these children are suffering from idiopathic hypercalciuria. Since, hydrochlorothiazide is effective in relieving hypercalciuria; we assessed its effects on reducing these relapsing pains in girls with idiopathic hypercalciuria.

Methods. In this clinical trial, 100 girls, aged 5-12 years old, with chronic relapsing abdominal pain and hypercalciuria were divided to two groups by random block design. All children and their parents were trained about consuming plenty of liquids and decreasing salt in foods. In addition to these measures, hydrochlorothiazide (1 mg/kg/d) was also administered to children in the case group. In those who did not become normocalciuric in the first visit, hydrochlorothiazide was increased to 1.5 mg/kg/d . The control group was assessed for the number of abdominal pain episodes for 3 months following the commencement of the diet and the case group for 3 months after becoming normocalciuric. The results were analyzed by *t* test.

Results. The mean number of pain episodes in hydrochlorothiazide group in the first, second, and third months were 0.38, 0.4, and 0.26 respectively, much lower than the corresponding months in the control group which were 1.60, 1.94, and 1.84 in that order ($P < .001$).

Furthermore, with continuation of hydrochlorothiazide use, the number of pain episodes in the third month was significantly lower than the first month.

Conclusions. It seems that single dose daily hydrochlorothiazide is a safe and effective drug in the treatment of chronic relapsing abdominal pain in children with idiopathic hypercalciuria.

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Assessment of the Effect of Ablution the Genital Area on the Result of Urine Culturing Among 3- to 12-Year-old Girls Who Have Referred to Amir-Kabir Hospital

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Introduction. Urinary tract infection (UTI) among children is the most prevalent bacterial infection and the second prevalent infection after viral Flu. Regarding this fact that urine culturing has very important role in diagnosis and perseverance of this disease and sampling method has significant effect on this disease remedy. Hence we decided to examine the urine analysis method among children who can control their urine in two different ways, one with abluion and the other without abluion. Ordinarily the abluion before urinalysis, especially among female people, is recommended. This is based on this fact that girls' special genital anatomy cause microbes which have colonized genital area contact with the urine and therefore the culture result becomes falsely positive. In this study the effect of genital area abluion on decreasing the contamination of urine culture is examined. In case of lack of significant contact we can cancel this method in providing urine sampling.

Methods. This study is in the form of a randomized clinical trial and case-controlled. In this study, 620 little girls (3- to 12-year-old) referring to Amir Kabir children special clinic are examined. Urine analysis was required for these girls with UTI suspicion. Population under investigation was patients who had not history of taking antibiotic during last seven days, sondage and genital anomaly and inflammation and genital discharge. Patients were randomly entered in to two different groups one with abluion and the other without abluion. In with-abluion group the correct way of genital area abluion with water and soap from front to the back were trained. Then middle-urine sampling was explained properly. In the second group just middle-urine sampling was explained and no abluion was done. After data collection, available inputs were statistically analyzed with SPSS and the effect of genital area abluion

was determined on decreasing the contamination of urine culture.

Results. Among 310 patients in with-abluion group 11 patients were reported UTI (3.7%), 3 patients were contaminated (1%), 296 patients were normal (95.3%). Among 310 patients in the second group, 14 patients were reported UTI (4.7%), 6 patients were contaminated (2%), 290 patients were normal (93.3%). Contamination rate in with-abluion group were 1% and in the other group was 2% ($P = .49$). In both groups no significant statistically difference were found between these two groups and the analysis result distribution in both groups in alpha = 0.05 level were statistically the same.

Conclusions. In both group no significant statistically difference were found between these two groups, so we concluded that the genital area abluion does not have such an effect on decreasing the contamination of urine culture and we do not suggest abluion of genital area in children before providing urine sampling.

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Influence of Prescription Pattern in General Practice on Antimicrobial Resistance

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Introduction. To determine organism isolated from urinary tract infection and change in the pattern of antibiotic susceptibility a four-year retrospective study was performed.

Methods. Urine samples from 968 patients with urinary tract infection between 1999 and 2003 were included and compared during these years.

Results. The most common organism causing urinary tract infection in these years was *E. coli* (75.3% to 79%) that followed by *Klebsiella* (8.7% to 11%) and enterococci (3.8%). Overall, the majority of organisms were resistant to ampicilin (more than 90%) and cephalexin (80.8%). There was a significant increase in antibiotic resistance during these years specially gentamicin (27.5% to 72.1%) and cotrimoxazol (39.7% to 74.15%; $P = .001$). The most common administered antibiotic in general practice and hospitals were ampicilin (24.1%), cephalexin (22.6%) and gentamicin (15.3%).

Conclusions. To increase antibiotic resistance causes difficulty in management of urinary tract infection. One of the most common causes of antibiotic resistance increment is frequent antibiotic usage that must be restricted to appropriate indication.

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The Outcome of Iranian Children With Mild Post Streptococcal Glomerulonephritis: A Single-Centre Study

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Introduction. Acute post streptococcal glomerulonephritis (APSGN) occurs as sporadic or epidemic disease. Although it is not a common disease in western countries, it is still one of the most common glomerulonephritis in developing countries. It was assumed that APSGN always recovered without any serious long term complications. However, recent studies have shown that APSGN might cause some degrees of renal impairment and hypertension. Most of these studies have been conducted only on patients with severe forms of the disease at the onset. Investigate the long term complications on children with a history of "mild APSGN", we limited our study to this group of patients.

Methods. This descriptive analytic study involved 27 children (aged under 15 years) with a previous history of mild APSGN hospitalised in St Zahra Hospital, Isfahan, Iran during 2004. The patients were divided into two groups. The first group involved 15 children with a history of APSGN about 4 years ago while the participating children of the second group had a history of APSGN about 8 years ago. Patients with mild APSGN were characterised with the following criteria: 1. Recovering from acute phase of disease in 7 days or less, 2. No decrease in GFR more than 30%, 3. No severe oedema, 4. No moderate or severe hypertension during hospitalization, 5. No need to prescribe antihypertensive drugs for long term, 6. No prolonged macroscopic hematuria for more than 7 days. Blood pressure was measured using a mercury sphygmomanometer in two successive examinations. We measured creatinine and micro albuminuria respectively by Gaffe method and electrophoresis.

Results. There was no significant age difference in two groups at the time of 7 (mL/min/1.73 m²) after 4 ± 26 and 128.57 the onset of disease. GFR were 127.7 years and 8 years respectively. No significant difference between two mean 14.06 ± 7.1 and 102.5 values was observed. Systolic blood pressure (SBP) was 95.33 mm Hg after 4 years and 8 years, respectively. The mean values were not significantly different. However, the mean values of diastolic blood pressure (DBP) after 4 years and 8 years showed significant difference ($P < .05$). The mean values of SBP and DBP 3.51 and 65.41 is 61.33 were compared with the mean values of age and sex and they matched normal population. Only the mean values for DBP between patients and normal population were significantly different ($P < .05$). Although two patients had microalbuminuria after 8 years, the statistics showed no significant difference between two groups.

Conclusions. We concluded that patients with mild APSGN need to be followed up for a long time and more investigations are required to determine the length of the follow up. In addition, increasing diastolic blood pressure may be one of the first heralding signs of future renal impairment. Therefore, long lasting follow up of APSGN children is crucial.

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Survey of Renal Scar in Children With Vesicoureteral Reflux and Urinary Tract Infection in 17 Shahrivar Hospital (2004 to 2006)

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Introduction. Pyelonephritic scarring is the most common cause of unilateral renal parenchymal disease that finally could be terminated to hypertension, renal insufficiency, and chronic renal failure. According to importance of diagnosis and treatment of urinary tract infection (UTI) and vesicoureteral reflux (VUR) as risk factors for renal scar formation, this study was performed to determine the probability of renal scar in patients with UTI and VUR.

Methods. This descriptive cross-sectional study was performed on 33 patients aged 1 to 14 years old with pyelonephritis who were referred to private clinic or hospitalized in nephrology ward of 17 Shahrivar Hospital during 24 months. Also, some patients who had pyelonephritis in the past 6 months were considered in this study. They underwent DMSA scan and grading of VUR was determined based on VUR International Committee classification. According to the performed studies, all children with VUR underwent DMSA scan during 4 to 6 months follow-up.

Results. of the patients, 106 (83%) were girls and 22 (17%) were boys. Thirty-three of the 128 children suffered from VUR (25.8%), 24 persons of whom were girls (13%) and the rest were boys (27%). Twenty-four children suffered from unilateral VUR and 9 suffered from bilateral VUR. The most common VUR type was grade II following by grade III in girls and boys. The most common VURs in the two sexes were grade II and III ($P = .007$). Fifteen children with VUR were 2 years old or younger, 11 were between 3 to 5 years old, and 7 were older than 6 years. The most common grade of VUR consisted of grade II in those aged 2 or less and 3 to 5 years old and grade III in those aged more than 6 years. Eight boys (73%) and 19 girls (61.3%) suffered from scar ($P = .003$). the scar site was in the upper pole in 47%, middle pole in 22%, and lower pole in 31% ($P < .05$). Of the 42 units with VUR, 18 were observed in the right kidney and 24 in the left kidney. Of 27 units which suffered from scar, 11 were in the right kidney

(41%) and 16 in the left kidney (50%).

Conclusions. There was a direct relationship between staging of the VUR and scar in the boys. These findings emphasized detecting VUR and UTI in boys who encountered high risk of scar. There was a reverse relationship between the age of patients and grading of VUR. Despite of this, there was no statistical relationship between the age of patients and the appearance of scar. In This study, 64% of kidneys with VUR and 12.5% of kidneys without VUR suffered from scar. Also, it was shown that most the of scars are in the upper and lower poles of the kidney, probably due to renal papillae and more probability of VUR in the upper and lower pole as compared with papillae in middle pole of the kidney. We suggest performing multicenter studies at other hospitals.

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The effect of orange juice on Cyclosporine A serum levels in pediatric renal Transplant Recipients

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Introduction. The aim of the present study was to investigate the effect of orange juice on the pharmacokinetic (PK) of cyclosporine A (CsA) in children receiving renal transplantation.

Methods. This was a placebo-controlled, three-way crossover study performed in the university departments of kidney transplant and pharmacology. On three study occasions, 10 kidney transplant recipients with stable CsA trough levels received either orange juice or water. Patients were given their individualized morning dose of CsA that administered with either 250 mL of water or 250 mL of the juice. Then, 12-hour CsA level and pharmacokinetic investigations were performed. The three investigations days were separated by at least 7 days. The main outcome measures were peak concentration and time to peak, area under the concentration-time curve, terminal half-life, and renal clearance and 24-hour trough levels of CsA.

Results. Administration of CsA with orange juice compared with water did not significantly increase the area under the whole blood concentration versus time curve in the interval from 0 to 12 hours (AUC 0-12) of CsA (Orange juice, 2833 ± 553 [$P = .059$]; water, 2719 ± 1713). Results in these children showed increases in the AUC 0-12, but intake of the juice did not have any significant influence on maximum whole blood concentration (C max) or time to C max (T max) of CsA.

Conclusions. Co-administration of orange (Thompson Novel) juice with CsA, compared with water, have no

significant effects on the AUC 0-12, C max and T max of the CsA in renal transplant children. On the other hand, the juice compared with water significantly increased renal clearance of the CsA and prolonged its elimination rate.

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Continuous Ambulatory Peritoneal Dialysis in Iranian Children: National Experience

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Introduction. Our aim was to summarize our experience with continuous ambulatory peritoneal dialysis (CAPD) in children.

Methods. The clinical records were collected from all CAPD centers for children in Iran. All children less than 14 years old at the time of dialysis initiation between 1993 and 2005 were included in this retrospective study. Technical failure was defined as changing CAPD to the other dialysis modalities or death due to complications of peritoneal dialysis. The removal of a catheter due to obstruction, displacement, or infection was assumed as catheter failure. Technical and catheter survival were analyzed by Kaplan- Meier and Log rank test was used to compare survival rates. *P* values less than .05 were considered significant.

Results. Between 1993 and 2005, 117 children (46% females, 54% males) were on CAPD. The mean age at start of dialysis was 3.4 years (range 28 day-16 year). Hereditary - cystic renal disorders comprised the most frequent reason of chronic renal failure among these children. The mean of patient survival was 0.88 year (95% CI, 0.61 to 1.16). The outcome of children were recovery of renal function (9%), renal transplantation (7.5%), switch to hemodialysis (12%), still on CAPD (12%), and death (58%). Cox regression model revealed that younger age

at the initiation of CAPD to be the only predictor of mortality ($P < .05$).

Conclusions. We recommend tight nutritional control, periodical education to parents and medical staffs to reduce mortality and morbidity.

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Autosomal Recessive Polycystic Kidney Disease: A Case Report

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Autosomal recessive polycystic kidney disease is characterized by renal collecting duct cysts, congenital hepatic fibrosis (biliary dysgenesis) and autosomal recessive pattern of inheritance. The disease usually manifests in infancy, and has a high mortality rate in the first year of life. Kidney involvement is always present and manifests as variable degrees of non-obstructive collecting duct ectasia, usually in bilateral and symmetrical fashion and interstitial fibrosis. Patients almost always have also hepatic involvement as congenital hepatic fibrosis (periportal fibrosis with anomaly and dilatation in intrahepatic biliary ducts) that can cause portal hypertension with esophageal varices, bleeding and hypersplenism. The relative degrees of kidney and liver involvement tend to be inversely: Children with severe renal disease usually have milder hepatic disease and vice versa.

This paper presents a 23-month old female with progressive renal failure and hepatic involvement (portal hypertension, esophageal varices bleeding and hypersplenism), which has been reported rarely.

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Correlation Between Prognosis and Response to Treatment in Children With Focal Segmental Glomerulosclerosis

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Introduction. We study to determine prognostic value of response to treatment in patients with focal segmental glomerulo-sclerosis (FSGS). FSGS includes 10% to 15% of idiopathic nephrotic syndrome in children. Bulk of evidence supports disease relationship with immune system. Unfortunately, responses to immunosuppressive drugs are not desirable and progression to end-stage

renal disease is common.

Methods. We analyzed 62 out of 99 cases of biopsy proven idiopathic FSGS who were followed for at least 5 years or till renal failure occurred during study. Study design was historical cohort and patients were divided into two groups: exposed (resistant to treatment) and non-exposed (responsive to treatment). Correlation between prognosis and response to treatment was statistically evaluated.

Results. In 3 out of 25 steroid responsive patients (12%) and 22 out of 37 steroid resistant patients (59.5%), disease progressed to renal failure. Disease progressed to renal failure in 2 out of 11 cyclophosphamide responsive patients (18.1%), 17 out of 23 cyclophosphamide resistant patients (74.3%), and 8 out of 14 cyclosporine resistant patients (57.1%). Two patients who responded to cyclosporine had normal renal function at the time of the last follow up.

Conclusions. We concluded that favorable response to steroid and cyclophosphamide treatment is a protective factor against disease progression to end stage renal disease and resistance to these drugs implies a poor prognosis. For making any definite conclusion concerning response to cyclosporine treatment and prognosis, similar studies with a larger sample are required.

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Recurrent Flank Pain with Microscopic Hematuria: Infandibular Stenosis

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Introduction. Infandibular stenosis is a condition where one or more renal infandibulum is stenotic. The stenotic segment can be isolated to a single calyx or affect multiple calices. It is an uncommon disorder; lucaya reported 3 affected children out of 11500 intravenous pyelography (IVP) performed over 17 years. It may be identified following evaluation of patients with urinary tract infection (UTI), gross hematuria, polyuria, urethral valves or ureteropelvic junction (UPJ) obstruction.

Methods. A 15 years old girl admitted hospital because of repeated episodes of severe left flank pain and vomiting for the 7th time. Urine analysis showed microscopic hematuria, urine culture and 24 hour urine analysis for calcium and uric acid were normal. Renal ultrasonogram was normal.

Results. IVP was performed and revealed isolated infandibular stenosis in left kidney. Consultation for ruling out of gastrointestinal and neurological etiologies was performed that was normal.

Conclusions. Fluid Therapy in Pediatric Victims of the 2003 Bam, Iran Earthquake

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Fluid Therapy in Pediatric Victims of the 2003 Bam, Iran Earthquake

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Introduction. Acute renal failure (ARF) related to the crush syndrome is the second most frequent cause of mortality after the direct impact of trauma. Majority of the rescued victims die because of preventable or treatable medical causes, most importantly due to ARF because of rhabdomyolysis. On December 26, 2003, a major disaster occurred in Bam city in the Kerman province in Southeastern of Iran. As a back-up center located 300 km eastern to the disaster area, Khatam-Al-Anbia University hospital of Zahedan accepted inpatient care for trauma victims. In this study the clinical and laboratory features and therapeutic intervention in 31 pediatric (3 months to 14 years) crush victims were analyzed. Determination of the type and amount of fluid therapy for prevention of ARF and dialysis need were the main aims of this study.

Methods. We classified the victims in three groups, group I was defined as: Crush injury (CI) with ARF, group II: CI without ARF and group III those without crush injury (Non-CI). Data of all patients were collected prospectively by a questionnaires designed by Iranian Society of Nephrology. In those with at least one of the three following criteria including: 1) CPK level more than 3 to 5 times of the upper limits of normal, 2) serum potassium more than 5.5 mEq/L, and/or 3) myoglobinuria, an alkaline intravenous (IV) solution, up to 3 to 5 times more than maintenance doses was infused. In each individual, the amount of intravenous fluid that was delivered in first three days of admission were registered (delivered-V), for better judgment on the amount of the fluid therapy, the ratio of delivered fluid (Delivered-V) to the basal fluid requirement (Basal-V) was calculated.

Results. Thirty-one of pediatric victims (20 M/11 F, Age, 3 months to 14 years old) were included in this study. There were 8 patients in group I (CI), 7 patients in group II and 16 in group III. There was no significant difference between crush injured (CI) patients with (n = 8) and without ARF (n = 7) in terms of severity in muscle injury. Ratio of delivered intravenous (delivered-V) fluid to the basal need of fluid (delivered-V/Basal-V) was significantly different between ARF and Non-ARF groups. It was 3.6 ± 0.99 in ARF and 4.8 ± 0.74 in non-ARF group ($P = .01$). Nobody needs dialysis in ARF group.

Conclusions. Our data showed that delivered-V/Basal-V ratio is the best marker for evaluation of IV fluid therapy

in pediatric patients. It seems that in children with crush injuries delivered-V/Basal-V ratio of more than 4.8 is sufficient to prevent ARF, and ratios of more than 3.6 may reduce the need for dialysis in ARF patients. Further studies in this field are highly recommended.

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Evaluation of Pediatric Renal Transplantation Outcomes: A Single Center Experience

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Introduction. Our objective was to relate the results of kidney transplants performed in children at our center.

Methods. An analysis of kidney transplants was performed on patients less than 18 years old engrafted from May 1989 to May 2007.

Results. Among 1350 kidney transplants recipients 80 were child. 40% of the patients were female. The mean age at transplant was 14.69 years (range, 6 to 18). The most frequent etiology of renal failure was glomerulopathy (40%) followed by vesicoureteral reflux/obstructive uropathy (27.5%). The donor was living unrelated in 85%, living related in 11.3% and deceased in 3.8%. The initial immunosuppression was CsA + AZA + PRED in 63.8%; CsA + MMF + PRED in 36.3%. Induction with ATG occurred in twelve patients and 2 received an anti-IL2 receptor antibody. The 28 graft losses during 18 years of follow-up were secondary to chronic allograft nephropathy in 11 (39.2%), acute rejection in 7 (25%), vascular thrombosis in 2 (7.1%), and recurrence of original disease in 1 (3.6%). Eight (28.5%) died with functioning grafts. The median of graft loss was 51 months. The median of patients' death was 45 months. Infection was the main cause of death.

Conclusions. Despite limited resources good outcomes are possible following renal transplantation in children in developing countries. To improve quality of life in children for very long-term outcome, acute rejection episodes should be further decreased and renal function should be better preserved.

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Five Cases of Vesicoureteral Reflux in a Family With Probable X-Linked Dominant Inheritance

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Introduction. Vesicoureteral reflux (VUR) is one of the most common inherited disorders in human. The mode of inheritance is poorly understood, but an autosomal-dominant manner has been suggested. VUR has been identified in 27 to 33% of sibling of index patients. An even higher incidence has been reported in children of parents who had reflux.

Methods. Case presentation: Siblings of a 13 years girl with ESRD due to reflux nephropathy screened for VUR. None of them had history of urinary tract infection (UTI).

Results. 2 brothers (5 and 8 years) of index patient had normal renal ultrasonogram and VCUG. Renal ultrasonogram in 2 out of 3 sisters of index patient was abnormal and VCUG in all revealed VUR, and unfortunately TC99-DMSA scan in 2 out of 3 of them showed renal scar. Parents were evaluated by renal ultrasonogram, and it identified small sized kidney in father and TC99-DMSA scan proved renal scar and VCUG showed unilateral grade IV VUR.

Conclusions. We found VUR in all girls of a family without boy involvement. This case presentation suggests probability of other inheritance mode for VUR in some families (such as X-linked inheritance).

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Short-Term and Long-Term Effects of Delayed Graft Function on Graft Survival in Pediatric Renal Transplantation

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Introduction. Delayed graft function (DGF) generally refers to oliguria or the requirement for dialysis in the first week post-transplantation. It could have early and long term consequences for allograft survival. Limited studies are performed about DGF and its complications in pediatric renal transplantation.

Methods. A total of 230 children received transplants between 1985 and 2005 in Labafi-Nejad hospital were assessed in this study. The children were divided in two groups: 183 children in group A (Non-DGF) and 47 patients in group B (DGF). Risk factors of DGF and the impact of DGF on renal function within the first year, long-term graft survival and post transplantation complications were analyzed and compared using Logistic regression model and Kaplan–Meier survival analysis.

Results. The incidence of graft failure at the end of follow-up period was significantly more common in DGF group (53.2% versus 22.4%, $P < .001$). The mean survival time was 134.20 (SEM = 6.17) months in group

A (Non-DGF) and 76.52 (SEM = 12.41) months in group B (DGF) ($P < .001$). The graft survival rate was 94.9%, 91.9%, 83.9%, 79.2% and 72% at 1, 3, 5, 7 and 12 years after transplantation in children without DGF versus 75.6%, 53.2%, 47.2%, 31.9% at 1, 3, 5 and 8 years after transplantation in patients with DGF.

Conclusions. The results of our study showed that delayed graft function could remarkably and independently affect graft survival and worsen both short-term and long-term transplantation outcomes. Thus, the prevention of DGF is one of the most important issues in graft survival improvement.

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Gastrointestinal Evaluation in Pediatric Renal Transplantation Candidates

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Introduction. To determine the importance of gastrointestinal evaluation in pre-transplantation phase in pediatrics with end-stage renal disease (ESRD)

Methods. Twenty four children with ESRD (13 female, 11 male) on maintenance hemodialysis were included in this study. Upper gastrointestinal endoscopies were performed and two gastric antral biopsy specimens were obtained for urease test and histological study for all patients. Patients' characteristics, as gastrointestinal manifestations, underlying diseases, duration of renal failure and dialysis, dialysis frequency and oral alkali supplementation were obtained and compared. Serum gastrin levels were measured in all patients, too. A control group was chosen to compare the rate of *Helicobacter pylori* (*H. pylori*) infection.

Results. Gastrointestinal symptoms were present in 16 (67%) of 24 patients. Seventeen (71%) patients had abnormal upper gastrointestinal endoscopic findings. *H. pylori* was detected in 66% of patients and 20% in control group ($P < .001$). In symptomatic patients 75% had abnormal endoscopic findings and 63% had positive urease test for *H. pylori* infection. While, in asymptomatic group, these rates were 30% and 75%, respectively. Seventy one percent of patients with gastrointestinal lesions and 50% of patients with normal endoscopic examination were infected. Oral alkali supplementation was received by 63% of symptomatic and 80% of asymptomatic patients. High serum gastrin levels in infected and non-infected patients were detected in 75% and 12.5%, respectively ($P < .001$).

Conclusions. We deserved a significant number of patients with *H. pylori* infection and secondary hypergastrinemia. This study showed that clinical symptoms are not a reliable predictor of gastrointestinal problems and this matter is more confusing in patients who received alkali. Our results emphasize the importance

of periodic, and also pre-transplant gastrointestinal evaluation in these patients to discover their problem and manage appropriately.

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Urine Macrophage Migration Inhibitory Factor in pediatric Kidney Transplantation

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Introduction. Macrophage migration inhibitory factor (MIF) plays a pivotal role in immune-mediated diseases. The potential role of MIF in renal transplants is unknown. Therefore, the aims of this study were to measure urine concentration of MIF after renal transplantation and to determine if it is increased with time.

Methods. In this prospective case-control study, 22 pediatric patients who received kidney transplants between 1999 and 2006, and 40 healthy children were recruited. Urine MIF concentrations were measured by ELISA and compared between the two groups.

Results. The mean ratios of urine MIF to creatinine (Cr) were calculated as 5.046 (SE = 2.04) pg/ μ mol in kidney transplant patients and 1.85 (SE = 0.35) pg/ μ mol in healthy individuals. A good significant correlation was seen between urine MIF/Cr ratio and the time after kidney transplantation in the kidney allograft recipients ($P = .002$, r Spearman = 0.633). Receiver Operating Curve analysis showed that urine MIF/Cr ratio has greater Area Under Curve (AUC) than serum creatinine to predict the time after transplantation of > 3 years in the recipients (AUC urine MIF/Cr = 0.929 versus AUC serum Cr = 0.567).

Conclusions. This study shows significant correlation between urine MIF/Cr ratio and the time passed after transplantation. Increasing MIF/Cr ratios were seen in patients with a longer duration of posttransplantation period. Therefore, it is necessary to determine the role of macrophages and MIF in kidney transplantation with additive studies and then the effect of anti-MIF antibodies in the treatment of this condition. This therapeutic attention to macrophages, in addition to T lymphocytes, may lead to improved outcomes in organ transplantation.

P219

Evaluation of Hemostatic Factors in Children With Nephrotic Syndrome

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Introduction. A hypercoagulable state and its risk of thrombo-embolism is one of the most serious complications of nephrotic syndrome (NS). Its incidence in children is 1.8% to 5%. Although most thrombo-embolic events have been reported in adults, especially those with membranous nephropathy, there is some evidence that subclinical thrombosis may be frequent in children. There is few information about hemostatic state of children with NS. The aim of this study is the evaluation of hemostatic factors in children with NS.

Methods. From 2005 to 2007, a total of 30 steroid-responsive children with NS were evaluated for plasma levels of protein C, protein S, fibrinogen, and antithrombin III at Children's Hospital of Tabriz. The tests performed once at the edematous phase and then were repeated at the remission phase after steroid discontinuation. These parameters also were measured in 30 age- and sex-matched healthy children as control group.

Results. Thirty patients (23 boys and 7 girls) with a mean age of 5.3 ± 3.07 years (range, 1.4 to 12 years) were studied. Mean plasma level of antithrombin III activity before therapy (81.7 ± 18.25) was significantly lower than that in the control group (104.43 ± 15.19) and that after treatment (105 ± 11.7) and was positively correlated with serum albumin levels at the edematous stage. Mean plasma level of protein S activity before therapy (88.4 ± 16.7) was significantly lower than that in the control group (103.87 ± 22.6) and that after treatment (98.57 ± 14.76). The mean fibrinogen level (374.5 ± 46.0 mg/dL) was significantly higher than that in the control group (218.8 ± 57.1 mg/dL) and that after treatment (228 ± 42.9 mg/dL). There was not any significant difference in plasma levels of protein C activity between the values before and after therapy and those in the control group. There was no correlation between 24-hour urinary protein excretion and coagulative parameters.

Conclusions. Thrombotic tendency in NS may be related to low plasma protein S levels and the antithrombin III and fibrinogen levels. Patients with severe hypoalbuminemia should be observed closely and prophylactic anticoagulation should be considered.

P220

Clinical Outcome of Congenital Nephrotic Syndrome in Iranian Children

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Introduction. Congenital nephrotic syndrome continues to be a diagnostic and therapeutic challenge for pediatricians. Our study is the first study on the clinical outcomes in Iranian children with congenital nephrotic syndrome at 2 pediatric nephrology centers in Tehran, Iran.

Methods. Between 1990 and 2005, there were 30 infants

with congenital nephrotic syndrome at 2 pediatric centers in Tehran. We assessed the clinical outcomes of these patients retrospectively.

Results. There were 15 boys and 15 girls with the mean age of 1.7 months. The presentation of the disease was nephrotic syndrome in 96.6% of the patients. Most patients (80%) presented within the first 3 months of life and 16 during the neonatal period. The Finnish type was seen in 43.3%, and DMS in 50%. Preterm labor and low birth weight was seen in 20%. A family history of nephrotic syndrome in infancy was noted in 8 children (26.7%); 5 patients (62.5%) had DMS type and 3 (37.5%) had Finnish type. Numerous complications of nephrotic syndrome occurred in 73.3%. Twenty seven episodes of infections were seen in 70% of patients which included septicemia with gram-negative and Staphylococcal infection, pneumonia, spontaneous bacterial peritonitis, cellulitis, gastroenteritis, epidural abscess, and urinary tract infection. Sepsis was seen in 43.3%, of which 61.5% was gram-negative sepsis and 38.6% was *S aureus* sepsis. Thrombotic complications and hypertension developed in 6.6% and 23.3% of patients, respectively. The mortality rate was 86.6%.

Conclusions. We concluded that the DMS is an important cause of congenital nephrotic syndrome. The outcome of our patients was poor and most of our patients died before getting 5 years old.

P221

Successful Treatment of a Child With Large T-Cell Posttransplant Lymphoproliferative Disorder by a Novel Chemotherapy Regimen

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Introduction. Posttransplant lymphoproliferative disorders (PTLDs) are a heterogeneous group of lymphoid proliferations that range from polyclonal hyperplasia to monoclonal malignant lymphoma. The PTLD can occur in any transplantation setting. The incidence of PTLD is approximately 1% to 2% in adult kidney transplant recipients, but data for a pediatric population are more limited. Lymphoproliferation is usually diagnosed within 12 months after transplantation, although later onset has been reported. Non-Hodgkin lymphomas account for 93% of PTLDs. The B-Cell phenotypes account for 86% of all PTLD cases, of which 90% are Epstein-Barr-virus positive. The T Cell origins comprise the remainder of PTLDs. Treatment of PTLD is not standardized and include reduction in immunosuppressive therapy, antiviral therapy in early EBV-positives, surgery or radiotherapy in localized disease, interfero-alpha, monoclonal antibodies, adoptive T cell immunotherapy,

and chemotherapy.

Methods. We report a case of a 13-year-old boy that was diagnosed with posttransplant large T-cell lymphoma in Feb 2007. He had been transplanted 3.5 years earlier. We chose to treat our patient with an adapted doxorubicin, cyclophosphamide, vincristine, bleomycin, and prednisone (ACVBP) regimen.

Results. He responded well to the chemotherapy without deterioration of graft function.

Conclusions. The regimen of ACVBP should be considered as a potentially curative approach for treatment of PTLN in pediatric allograft recipients

P222

Diagnosis of Ureteropelvic Function Obstruction in Children: Comparison Between Intravenous Pyelography and Divertic Renal Scan

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Introduction. Ureteropelvic Junction obstruction (UPJO) is of the most frequent causes of urinary tract obstruction in children. Several methods are used to diagnose urinary tract obstruction, including renal ultrasonography (US) intravenous pyelography (IVP), diuretic renal scan, and retrograde pyelography. The aim the present study is to perform a comparison of IVP and diuretic renal scan in the diagnosis of UPJO.

Methods. This study is a prospective longitudinal investigation in children (28 boys, 12 girls) with a diagnosis of UPJO who presented with urinary tract infection (UTI), prenatal hydronephrosis, abdominal/flank pain, abdominal mass, and hematuria. Renal ultrasonography was used as an initial screening tool for detection of urinary tract abnormality. Vesicoureteral reflux (VUR) was ruled out by voiding cystourethrography. Serum creatinine, blood urea nitrogen, urinalysis, and urine culture were examined for all children. The IVP and TC-99m diethylene triamine pentaacetic acid (DTPA) diuretic renal scan were performed in all patients.

Results. During two years, 40 patients were diagnosed as UPJO; their ages ranged from 40 days to 13 years (mean, 9.2 years). There was a significantly higher proportion of UPJO in the boys (70%) and on left side (65%). The sensitivity of renal scan in the diagnosis of UPJO was 100% and for IVP was 95%.

Conclusions. Diuretic renal scan seems to be the most useful clinical tool in poorly functioning large hydronephrotic kidneys and IVP could not be used in patients with renal impairment and those allergic to radiocontrast media. There was no significant difference between the two diagnostic procedures in the kidneys with normal or nearly normal function.

P223

Diagnostic Potential of Urinary Proteins in Children With Acute Pyelonephritis

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Introduction. Urinary tract infection (UTI) is a common clinical problem in infancy and childhood. It occurs in up to 17% of girls and 1% to 1.6% of boys. Prompt diagnosis of the infection and the localization of its level are of great importance in determining the duration of treatment and the appropriate investigation and prognosis of the patients. The most important complications of pyelonephritis in children are hypertension, renal scars and renal insufficiency. In the last decade, the dimercaptosuccinic acid (DMSA) scintigraphy has been considered an objective method for the localization of the UTI site. The urinary excretion of enzymes, is considered a relatively simple, cheap, fast and non-invasive method in the detection and follow-up of pyelonephritis.

Methods. These are the results of 3 quasi-experimental studies conducted between 2001 and 2006 on patients with pyelonephritis, admitted to Mofid Children's Hospital. Diagnosis of pyelonephritis was carried out by standard criteria. The first fresh morning urine sample was collected before and after treatment and analyzed for Creat, NAG, IL-8 and procalcitonin. A blood sample from each patient was collected for CBC- ESR and CRP and DMSA scan, VCUG and US was performed for all patients.

Results. Sensitivity of urinary PCT, IL8 and NAG was 36%, 70% and 75% respectively and specificity of these markers was 63%, 75% and 78% respectively. We also reported a significant correlation between the level of urinary PCT and polymorphonuclear, ESR and CRP and the level of IL8 with urinary white blood cells and urinary NAG with changes in kidney ultrasonography and urine culture. The other important aspects in our results were the significant correlation between urinary PCT and grading of vesicoureteral reflux in VCUG and correlation between the level of urinary NAG and hydronephrosis and renal stone.

Conclusions. We concluded that urinary PCT, IL8 and NAG are increased in pyelonephritis and urinary PCT and NAG could be as a marker of urological abnormalities in pediatric patients.

P224

Spectrum of chronic renal failure in children of Mashhad

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Introduction. The causes of chronic renal failure (CRF) vary from one center to another. In this study we reviewed our experience with the different types of renal disorders leading to CRF in children of Mashhad.

Methods. We investigated CRF in 68 children (39 boys and 29 girls) who presented to the Dr Sheikh Hospital, Mashhad in the period from 2001 to 2006. The mean age at onset of CRF was 13.3 years.

Results. The causes of CRF included reflux nephropathy (19.1%), glomerulonephritis (17.6%), Neurogenic bladder (16.1%), focal segmental glomerulosclerosis (8.8%), urological abnormalities (4.4%), litiiasis (5.8%), others (13.5%) and idiopathic (14.7%).

Conclusions. Reflux nephropathy was the major cause of CRF in this study. This finding is at variance with what is reported in some other countries where urologic abnormalities were the leading cause of CRF. The reason for this variation is not readily obvious. However, prevalence of causes of reflux nephropathy such as urinary tract infection may be higher in our population.

P225

Childhood Vulvovaginitis

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Introduction. The aims of this study are evaluation of clinical findings, microscopic examination and culture of vaginal secretions, and response to treatment in prepubertal girls with vulvovaginitis.

Methods. Over a period of about 6 years in a clinic for pediatric kidney and urinary tract disease 171 girls aged 2.5 to 8 years with urogenital symptoms were studied prospectively.

Results. Dysuria, erythema, itching, soreness, and vaginal discharge were genital symptoms and signs. Pathogenic bacteria were isolated in 27% of cases and streptococcus pyogenes was a common agent. Nonpathogenic enteric flora was isolated in about 43%. There was no growth of bacteria in 30%. Poor hygiene was an associated risk factor in those with nonpathogenic positive culture ($P = .001$). There was statistically significant difference of purulent vaginal discharge between cases with vulvovaginal pathogenic infection and those with negative culture ($P < .001$). Also there was significant difference of observing WBC in vaginal smears between those with pathogenic bacteria and patients who had no growth of pathogens ($P < .001$). Candida and sexually transmitted agents were not found in any of the girls. Labial fusion was not an uncommon abnormality. Simple measures to improve hygiene and use of local estrogen were effective in the patients with nonpathogenic and nonspecific etiology.

Conclusions. Physical examination of genital area should be done in all girls with genitourinary symptoms.

Antibiotic should be prescribed based on bacteriologic culture of vaginal secretion. Advice about hygiene practices and local estrogen is the most effective policy in children with noninfectious vulvovaginitis. Anti fungal creams usually have not place in the initial management of childhood vulvovaginitis. The possibility of sexual abuse or foreign body in vagina must be considered particularly if the vulvovaginitis is persistent or recurrent after adequate treatment, but our data indicate they are not contributory factors.

P226

The Effect of Immunosuppressive Therapy on Erythrocyte Glutathione Levels in Kidney Recipients

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Introduction. The kidney is highly dependent on an adequate supply of glutathione (GSH) to maintain normal function. Evidence from experiment animal models indicates that increased oxidative stress as a consequence of disturbance in GSH homeostasis may lead to tissue damage, and eventually, graft loss. The goal of this study was to examine the effect of immunosuppressive therapy (IT) on erythrocyte GSH (eGSH) levels in kidney recipients.

Methods. Twenty-six recipients of their first kidney allograft (age range, 30 to 60 years) were enrolled. Patients received a cocktail comprising cyclosporine, azathioprine and prednisolone as the IT. Blood samples were obtained prior to IT. Sampling schedule commenced at day 1 (pretransplantation) and posttransplantation day 1 up to day 14 (every day), and thereafter on days 21, 28, and 35. The eGSH concentrations were analyzed by spectrophotometer. For comparison, a group of healthy subjects was used as control.

Results. The eGSH concentrations were significantly higher in healthy volunteers than in the candidates for kidney transplantation (1.46 versus 0.95 mMol, $P > .05$). Monitoring of eGSH levels during preoperative and postoperative periods revealed that IT was not linked with major changes in the GSH levels. In the recipients from cadaveric donors, the GSH content was lower (~ 50%) when compared with those from living related donors. Larger fluctuation in the eGSH levels were found in patients with acute rejection or acute tubular necrosis when the patterns were compared to those with a stable postoperative course.

Conclusions. We have established that the GSH concentration is significantly diminished in recipients from cadaveric donors than in those from living relative donors. Another important finding is that major fluctuations were seen in the GSH contents in

patients with acute rejection and acute tubular necrosis compared to those with a stable postoperative period. Taken together, these findings imply that maintaining an adequate supply of GSH is vital to ensure normal kidney function and long-term graft survival, especially in those receiving cadaveric organs.

P227

Evaluation of Osteoporosis Frequency and Its Risk Factors in Kidney Transplanted Patients

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Introduction. Decreased bone mineral density is a common problem after kidney transplantation and osteoporosis has a major role in morbidity of these patients. Risk factors are corticosteroids, cyclosporine, hemodialysis duration, and many others, but little of them are well understood. This study was performed to evaluate the frequency of osteoporosis and determination of its risk factors.

Methods. In a cross-sectional study, those renal transplanted patients who were between 17 and 50 years old and transplanted between 6 months to 2 years ago were included. Bone mineral densitometry (BMD) were performed by DEXA, data about age, sex, BMI, hemodialysis duration, post transplant time, cumulative dose of prednisolone, cyclosporine (Neoral), and cellcept and numbers of methylprednisolone pulses were collected. T-scores ≤ -2.5 SD were considered osteoporosis and T-scores between -1 and -2.5 SD were osteopenic. Abnormal Z-scores were considered < -1 . Chi square, fisher's exact test and logistic regression were used.

Results. Seventy-seven patients were enrolled. Frequency of osteoporosis was 26% (20/77). 28/77 patients were female. Mean age was 34.6 ± 8.7 . The most common site of osteoporosis was hip. Nineteen of 77 BMDs performed on hip were osteoporotic (24.7%) and 42 were osteopenic (54.5%). In spine 7.8% were osteoporotic, 67.5% were osteopenic. There was significant relation between post transplant creatinine (at the study time) and osteoporosis of hip ($P = .01$). No relations were found between osteoporosis and age, sex, BMI, hemodialysis duration and cumulative dose of any drugs or methylprednisolone pulses. Z-scores < -1 in hip or spine had no relation with numbers of methylprednisolone pulses but had significant relation with total dose of cyclosporine A ($P < .001$), prednisolone ($P < .001$) and cellcept ($P < .05$). Z-scores under -1 in hip was related with post transplants days ($P = .02$).

Conclusions. Osteoporosis is a frequent complication in this study. Therefore detection and treatment of

patients, who are in danger, may decrease the morbidity of fragility fractures due to osteoporosis.

P228

Effect of Risk Factors on Graft Survival in Renal Transplant Recipients in Ekbatan Hospital of Hamedan From 1994 to 2004

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Introduction. Renal transplantation has become the treatment of choice for end stage renal disease. While graft survival rates in the short term have improved dramatically, only a modest improvement has been shown in long-term graft survival rates. We evaluated the risk factors of late graft failure in renal allograft recipients.

Methods. We analyzed the influence of demographic characteristics (age, sex), posttransplantation variables (presence or absence of rejection, hypertension, hyperlipidemia, and diabetes), therapy with mycophenolate mofetil or azathioprine, angiotensin converting enzyme inhibitors (ACEI), and statins on graft survival for all 257 renal transplantations performed in the Ekbatan Hospital between 1994 and 2004. The Kaplan-Meier analysis and multivariate Cox regression analysis were used to estimate the graft survival and effect of risk factors on graft survival.

Results. The 11 year patient and graft survival were 0.57 and 0.77, respectively. The graft half life was 16.44 years and the pure graft half life was 30.2 years. At Kaplan-Meier analysis, older age, female donors, male recipients, lipid profile, mean arterial pressures, FBS, use of azathioprine, no use of ACEi and no use of statins were associated with poor outcomes. Chronic allograft nephropathy was the cause of failure in 14 patients and death was in 33 patients. In multivariate Cox regression analysis, older age of both donor and recipient, male recipient, female donor, postransplant cholesterol, LDL, TG, FBS, use of AZA, no use of ACEI and statins were each significantly associated with graft failure.

Conclusions. We found significantly greater survival of patients having a post transplant cholesterol below 250 mg/dL, TG below 220 mg/dL, LDL < 150 mg/dL, FBS < 110 mg/dL. Patients with use of cellcept, ACEI and statins had greater life expectancy. Transplantation in older ages accompanies with poor outcomes and donation of a male kidney to a female recipient is best choice to the other matches. Pretransplant selection for age, sex and preparation of candidates as well as appropriate life style and control of complications after transplantation (eg, hyperlipidemia) are recommended to improve life expectancy and extent graft survival.

P229

Do Mechanical fluid Laws Dictate the Branching Pattern of Renal Artery?

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Introduction. Anatomy of renal artery is an important issue in renal transplantation. Multi-detector computed tomography (CT) angiography (MDCTA) is an accurate modality in the pre-operative evaluation of live renal donors and provides excellent anatomic detail of donor's arterial anatomy

Methods. Here we studied the relationship between the angle of emergence of renal artery from aorta and its branching pattern. In this study, the MDCTA images (Siemens, Erlangen, Germany) of kidney donors were studied retrospectively. The course of the renal arteries from the aorta to the kidney hilus of the right and left renal observed. The angle of emergence of renal artery from the aorta (beta-angle) and the length of the renal artery from the aorta until the emergence of the first branch was measured (delta-distance). All measurements calculated by machines computer software.

Results. From 77 studied subjects (M/F 63/14, age: 28.7 ± 4.3), 144 measurements of beta-angle and delta-distance were measured on right and left kidneys and finally 138 measurements were studied. Measurements exhibited a range of beta-angles between 30 degrees and 90 degrees with a mean value of 63.4 ± 16.4 degrees, mean value for delta-distance was 34 ± 11 mm, there was a strong meaningful correlation between 1- beta-angle, and delta-distance ($P = .001$)

Conclusions. This study showed that if the emerging angle of renal artery from aorta is less acute, the first branch emerges later and there is a more renal artery length without any side branch.

P230

Thrombotic Microangiopathy After Renal Transplantation

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Introduction. Post renal transplant thrombotic microangiopathy (TMA) may be a cause allograft dysfunction. The aim of this retrospective study was to identify the cases of post renal transplant TMA in a

single transplant center over a period of five years.

Methods. In a descriptive and retrospective study, we reviewed the renal biopsy specimens of 57 renal transplant recipients with allograft dysfunction among 237 patients who had obtained their transplantation between April 2001 and 2006 in the kidney transplant center of Tabriz Medical University. The presence of fibrin thrombi within the glomerular capillaries or arterioles was used to define TMA. Systemic TMA was justified with the presence of thrombocytopenia (platelet count $< 100 \times 10^3/\text{mL}$) and the evidence of microangiopathic hemolysis (schistocytes on the peripheral blood smear and LDH $> 1000 \text{ U/L}$). Patients with allograft renal biopsy findings compatible with TMA but without these findings were categorized as having a localized TMA.

Results. The mean age of the patients with allograft dysfunction was 36.3 ± 17.3 years with 26 males and 31 females. The causes of renal allograft dysfunction as found on microscopic examination of the renal biopsy specimens were cellular rejection ($n = 36, 63\%$), vascular rejection ($n = 4, 7\%$), acute tubular necrosis ($n = 4, 7\%$) and TMA ($n = 6, 10.5\%$). Four patients had a systemic TMA while two of them had a localized disease. While two of six patients with TMA had received a cadaveric kidney, only one out of 51 patients with TMA non-related allograft dysfunction had cadaveric donor.

Conclusions. Post transplant TMA constitutes 10.5% of cases of early renal allograft dysfunction. A high index of suspicion is needed for diagnosing this entity as a potential cause of post kidney transplant allograft dysfunction. Early and appropriate treatment is associated with graft and patient survival. Further studies with a higher number of patients may be required to highlight the risk factors of post renal transplant TMA.

P231

Renal Allograft Vasculitis, a New Feature of Parvovirus B19 Infection

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Introduction. Parvovirus B19 (PV-B19) can cause many clinical disorder of which the most common are acute aplastic anemia in renal transplant recipients. However, the full spectrums of its clinical manifestations are not well characterized. We report here the occurrence of thrombotic microangiopathy (TMA) combined with intra-renal small and medium sized vessels vasculitis in patients with active PV-B19 infection, as far as we

now this is the first report of this combination in renal transplant patients.

Methods. In this single center prospective study we evaluated the clinical role of PV-B19 infection in renal transplanted patients who presented with acute unexplained anemia (Hgb $< 10 \text{ mg/dL}$). Serologically positive patients were future evaluated with bone marrow aspiration (BMA), biopsy, and renal biopsy performed in those with renal allograft dysfunction. Over a period of four months between January to April 2007, 95 renal transplant recipients visited. Eight patients had acute unexplained anemia. Six of them (M/F 3/3, 24 to 48 years) were positive for specific IgG and IgM antibodies against PV-B19. Renal allograft function was deteriorated in all of them (serum creatinine level $> 2.5 \text{ mg/dL}$) Two of them were placed on Hemodialysis since two months ago. Because of sever allograft pain and tenderness, both of them underwent the renal allograft nephrectomy. We also found a various degree of Thrombocytopenia and Leucopenia among these patients. Three patients had proteinuria and one of them had a recent episode of right upper extremity vein thrombosis. BMA study was positive for giant Pronormoblasts and Foamy-fragile macrophage. Renal allograft biopsy disclosed intra-glomerular fibrin thrombi and endothelial cell ballooning compatible with TMA in four patients, three of them had neutrophil granulocytes cells invasion and destruction of intra-renal arteries that was compatible with vasculitis.

Results. Over a period of 4 months between January to February 2007, 95 renal transplant recipients visited. Eight patients had acute unexplained anemia. Six of them (M/F 3/3, 24 to 48 years) were positive for specific IgG and IgM antibodies against PV-B19. Renal allograft function was deteriorated in all of them (serum creatinine level $> 2.5 \text{ mg/dL}$). Two of them were placed on Hemodialysis since two months ago. Because of sever allograft pain and tenderness, both of them underwent the renal allograft nephrectomy. We also found a various degree of Thrombocytopenia and Leucopenia among these patients. Three patients had proteinuria and one of them had a recent episode of right upper extremity vein thrombosis. BMA study was positive for giant Pronormoblasts and foamy-fragile macrophage. Renal allograft biopsy disclosed intra-glomerular fibrin thrombi and endothelial cell ballooning compatible with TMA in four patients, three of them had neutrophil granulocytes cells invasion and destruction of intra-renal arteries that was compatible with vasculitis.

Conclusions. In this study, we found a cluster of renal-transplant patients with active PV-B19 infection during the cold season in our center. Clinical presentation was not limited to acute anemia and intra-renal allograft vasculitis was a novel finding of this study. Occurrence of brachial Vein thrombosis was also a new finding that may needs future explanation.

P232

Polytetrafluoroethylene Vascular Graft, the Rescuer of Short Renal Vessels During Kidney Transplantation

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Introduction. Short or damaged renal vessels represent a serious challenge during the kidney transplantation. There are various described techniques to repair a short or damaged donor kidney artery. End-to-end anastomosis of the graft artery, side-to-side anastomosis of the branch artery, and the use of the iliac arterial graft are of them. Also there are different techniques to repair a short or damaged donor vein such as transposition of the recipient's external iliac vein following ligation of the internal iliac vein, lengthening of the donor vein by dissection at the renal hilum and the use of the venous grafts. We describe the cases of five kidney transplantations in which polytetrafluoroethylene (PTFE) vascular grafts (GORE-TEX, WL Gore & Associates, Inc, Newark, DE, USA) were interposed between graft and recipient's vessels. None of the above mentioned techniques were possible to be used that made us to use a synthetic vascular graft in mean of lengthening the vessels.

Methods. Four of the donors were live unrelated donors and the fifth was a deceased unrelated donor. The PTFE grafts were used as arterial grafts in two of the patients and in the other three, as venous grafts. The shortness of the vessels was either primary or secondary to situations such as vascular stenosis or short accessory renal artery.

Results. Case 1: A 36 year old man with ESRD secondary to chronic GN. A PTFE vascular graft, 4 cm in length and 6 mm in diameter, was used for anastomosis of the artery to the external iliac artery. The 6 year follow-up of the patient shows a normal kidney function with a current serum creatinine of 1.4 mg/dL. Case 2: A 53 year old woman ESRD secondary to VUR. A PTFE vascular graft, 4 cm in length and 6 mm in diameter, was interposed between the renal vein and the external iliac vein. The 1 year follow-up of this patient indicates normal kidney function with a current serum creatinine of 1.3 mg/dL. Case 3: A 53 year old man with chronic rejection of the previous transplanted kidney. While trying for anastomosis the renal vein with the external iliac vein, A PTFE vascular graft, 4 cm in length and 6 mm in diameter, was used due to the shortness of the vein. The patient was discharged with a serum creatinine of 1.1 mg/dL. Case 4: A 36 year old man with ESRD secondary to severe hypertension. For anastomosis of the donor renal vein to the external iliac vein, due to its shortness and tightness, a PTFE vascular graft, 4 cm in length and 6 mm in diameter, was used. The 6 month follow-up of this Case 5: A 36 year old man with chronic rejection of the previous transplanted kidney. A PTFE

vascular graft, 7 cm in length and 6 mm in diameter, was used for anastomosis of the accessory renal artery to the external iliac artery. The 2 year follow-up shows normal kidney function and a current serum creatinine of 1.2 mg/dL.

Conclusions. Short or damaged vessels can consume more time and extend the length of the warm ischemia during renal vessel anastomosis. Various methods have been described to repair these vessels, but most of them may cause serious adverse effects. The use of synthetic vascular grafts, such as PTFE, can solve the problems without those adverse effects. There are few reported cases in which PTFE vascular grafts were used in reconstruction of renal vessels during kidney transplantation. Our report adds 5 new cases of PTFE graft usage as a renal vascular graft, both as arterial and venous, to what has been previously described. There were only two reported cases of PTFE usage as a renal venous graft before, as we know, that had made it rarer to be used than PTFE renal arterial grafts. In our cases, the patients had uneventful follow-ups that convince the surgeons to use it more assuredly. Our report provides an easy to use technique for solving the problems of short or damaged renal vessels during kidney transplantation. Although we did not experience any complication in the use of PTFE grafts, it is recommended to test and compare the long-term outcomes of synthetic vascular grafts such as PTFE grafts with biological ones.

P233

Acceptability of Iminoral among Iranian specialties

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Introduction. Aside from clinical studies on Iminoral (immunosuppressive drug cyclosporine; Zahravi Pharmaceutical Co) in different diseases, we perform this study to evaluate a rough estimation of clinicians' satisfaction from this drug and its possible side effects.

Methods. A self administered questionnaire was sent to Iranian specialties who may prescribe cyclosporine for their patients mainly nephrologists and dermatologists in spring-summer 2007. It contains a number of questions asking about the general satisfaction of physicians from Iminoral and its side effects.

Results. From 118 returned questionnaires, 102 physicians (87.2%) have been prescribed Iminoral for their patients. From these, 30.7% managing non-transplanted patients, 12.9% managing transplanted patients and 56.4% managing patients from both groups. Estimated number of patients currently on Iminoral is about 5200 by contributing physicians. Drug accessibility and sufficiency is about 95% in Iran. Of the patients, 76% had

no drug side effects. The most reported side effects were gastrointestinal symptoms. In changing the drug from Neoral to Iminoral, 83.8% reported no serum creatinine changes. From clinicians with sufficient experience with Iminoral, 78.2% have more than 80% satisfaction.

Conclusions. This study shows that Iminoral is an acceptable drug in practices with perfect quality and little side effects in both transplanted and non-transplanted patients.

P234

Post-Kidney Transplant Hepatitis C Virus and Its Impact on Graft and Patient Survival

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Introduction. Our aim were to determine the post transplant positive anti-HCV patients who were negative before transplantation and to investigate whether graft and patient survival alter in whom became positive anti HCV.

Methods. From 1989 to 2003, a total of 800 kidney transplantations were performed in our center. 62 anti HCV negative patients were included in this study. The mean age was 32 years (7 to 69) (33.9% female and 66.1% male), and followed for 4 years. Liver function tests and viral markers measurements carried out every 3 months. During follow up period any acute or chronic rejection and mortality were recorded. The results were analyzed using the Fisher exact test, chi-square test, and ANOVA.

Results. Anti-HCV positive was occurred in 8 patients (12.9%), all were confirmed with third generation recombinant immunoblot assay (RIBA 3) and HCV RNA polymerase reaction. All of them had history of pretransplant transfusion, and 83 % of them were under hemodialysis for more than 30 months. We found no acute or chronic rejection in anti-HCV positive patients. Two patients (25%) had liver enzymes increase. One anti-HCV positive patient expired. due to acute hepatitis. No chronic hepatitis C was seen.

Conclusions. Although in our study the impact of posttransplant anti-HCV positive on graft survival was not significant, long-term evaluation for better prejudice is mandatory; so, we highly recommend evaluation of anti-HCV negative patients after kidney transplantation.

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Ureteroscopic Management of Urological Complications

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Introduction. Our aim was to determine the feasibility, safety, and efficacy of diagnostic and therapeutic ureteroscopy in renal allograft ureters.

Methods. We reviewed 1560 consecutive renal allograft performed between June 1989 and February 2002. Of these, 28 patients (1.8%) had indications for endoscopic procedure of the allograft ureter. Six patients had obstructive ureteral calculi with a history of failed ESWL, 3 had suspected ureteral strictures, nine had upward migrated ureteral stents and 10 had ureteral stricture at ureteroneocystostomy sites. The ureters have been anastomosed to the bladder using the leadbetter politano (6) and Lich-GreGoire (22) methods of the ureteric implantation. Ureteroscopies were performed with semirigid 9.8-F Wolf ureteroscope.

Results. Identifying and cannulating the transplant ureteral orifice was successful in 19 (68%). Four of the ureteral calculi (67%) were removed with ureteroscope. Seven of the migrated stent (78%) were retrieved. Four of the patients with ureteral strictures (40%) had successful ureteral dilatation and a double J ureteral catheter insertion. Diagnostic ureteroscopy was successful in all cases. Complications were one urinary leakage and one symptomatic urinary tract infection.

Conclusions. Transplant ureteral endoscopy was safe and effective for the management of urological complication after renal transplantation. Ureteroscopy is technically demanding in these patients. One should consider ureteroscopy as an alternative to percutaneous and antegrade modalities, as these methods carry significant morbidity.

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Microchimerism and Renal Transplantation: Doubt Still Persists

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Introduction. The Presence of donor leukocytes in recipients of organ allograft has been shown even several years after transplantation. However, it remains unclear whether this donor cell microchimerism plays an effective role in allograft acceptance or is simply a consequence of immunosuppression condition in recipients.

Methods. In this study we retrospectively evaluated the Peripheral Blood Microchimerism (PBM) after renal transplantation in 32 male-to-female recipients of living (unrelated) and cadaveric donor renal transplants. Using a nested polymerase chain reaction amplification specific for SRY region of the Y chromosome, microchimerism was detected with sensitivity up to 1:1 000 000. According

to the presence of PBM recipients were classified into microchimeric and nonmicrochimeric group, and then acute and chronic rejection episodes, type of allotransplant (living or cadaveric donor), recipient and donor age at transplantation, previous male labor or blood transfusion, allograft function (serum creatinine level), and body mass index were compared between two groups.

Results. Among 32 recipients 7 (21.9) were positive for PBM in multiple testing at different post-transplantation times. All microchimeric recipients had been received kidney from living-unrelated donors. Regarding to other parameters mentioned above significant difference was not observed. In addition, acute rejection rate in microchimeric group was 3 (42%) versus 4 (16%) in nonmicrochimeric recipients (not significant).

Conclusions. Our results demonstrate better establishment of microchimerism after living donor kidney transplantation. But, concerning true effect of microchimerism after renal transplantation doubt still persists; and it seems that microchimerism alone has no major protective role in renal allograft survival.

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Efficacy and Safety of Alendronate in the Prevention of Bone Loss in Renal Transplant Recipients

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Introduction. Rapid loss of bone mass density occurs immediately after transplantation, which contributes to an increased risk for osteoporosis and fractures. Few data are available regarding potential preventive therapies. Bisphosphonates that inhibit bone resorption have been shown in some studies to ameliorate post-transplant bone loss. The prevention and management of bone loss after renal transplantation have yet to be elucidated. The purpose of this study was to investigate whether alendronate therapy immediately after transplantation prevent bone loss and to assess its safety on graft function and serum cyclosporine level.

Methods. We recruited 50 patients (32 men and 18 women with a mean age of 39 years, range 17 to 66 years) and randomly assigned them to two groups: alendronate treatment group (n = 25) and placebo group (n = 25). We conducted a prospective placebo controlled, randomized trial of alendronate (10 mg daily) with calcium carbonate (1 g daily) and calcitriol (0.25 µg daily) compared with calcitriol (0.25 µg daily) and calcium carbonate alone for 6 months, beginning within 2 weeks after transplantation. BMD at lumbar and femoral neck was measured using dual-energy x-ray absorptiometry prior transplantation and after six months. Graft function was assessed by measuring serum

creatinine level and serum cyclosporine trough level was measured by radioimmunoassay every 2 months until the end of study.

Results. Each group did not differ in age, BMD at lumbar vertebrae and in femoral neck, cause of renal failure and duration of hemodialysis. BMD in patients treated with alendronate increased significantly (BMD at L2 to L4: 0.91 ± 0.18 to 0.94 ± 0.11 ; $P < .05$). BMD at femoral neck: 0.73 ± 0.09 to 0.77 ± 0.12 ; $P < .05$), but BMD decreased in the placebo group (BMD at L2-L4: 0.92 ± 0.08 to 0.9 ± 0.09 ; $P < .05$, BMD at femoral neck: 0.75 ± 0.11 to 0.72 ± 0.1 ; $P < .05$). Relative changes in BMD at L2 to 4 in the treatment and control groups were +3.2% and -2.2% six months after transplantation ($P = 0.001$) and relative changes in BMD in femoral neck in the treatment and control group were +5.4% and -4% at the end of treatment respectively ($P = 0.001$). Serum cyclosporine levels change were independent of alendronate or placebo within six months after transplant. Need for cyclosporine dose adjustment according to serum trough level was not different significantly between alendronate and placebo group. Graft function was similar between groups and did not change statistically significant during study period.

Conclusions. Our data suggest that alendronate increases bone mass density following renal transplantation. Alendronate is effective for prophylaxis of rapid bone loss early after renal transplantation with no adverse effect on graft function or serum cyclosporine level.

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Effects of Minimal Hepatitis C Virus Infection on Patient and Graft Survival in Renal Allograft Recipients: A Case-Control Study

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Introduction. The impact of pretransplant HCV infection on the outcome of renal transplantation is controversial. HCV infection may or may not negatively impact the patient or graft survival. This study attempted to determine the impact of pretransplant minimal hepatitis C virus infection on the patients and grafts of renal transplants at a single center in southwest of Iran.

Methods. A total of 337 adult renal transplant recipients were prospectively recruited between May 1997 and December 2001. Data from 337 renal recipients, 35 anti-HCV (+)/RNA (+) with minimal hepatitis, and 35 anti-HCV (-) performed at Golestan Hospital in Ahwaz were collected prospectively. HCV-negative transplanted patients were used as the control group. Patient and graft survival and clinical outcomes were compared between patients with and without HCV infection.

Results. There was no significant difference in the

incidence of acute rejection between the groups ($P = .25$). Survival of both patients and kidney allograft was similar between patients with and without hepatitis C virus infection ($P = .37$ and $P = .21$, respectively). The main cause of death among patients with and without HCV infection was sepsis and cardiovascular events, respectively.

Conclusions. Our findings suggest that pretransplant minimal hepatitis C infection had no detrimental effect on short term patients and graft survival. Renal transplant recipients with minimal HCV infection must be monitored for severe systemic bacterial infections.

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Prevalence of Bowel Contamination With Parasites and Fungi in Iranian Kidney Transplant Recipients

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Introduction. Kidney transplant recipients routinely use immunosuppressives and are susceptible to a variety of infections. Data on the prevalence of parasitic and fungal bowel contaminations in Iranian transplant recipients are limited. This study was conducted to address the issue in a controlled cross-sectional study.

Methods. A total of 150 kidney transplant recipients and 225 outpatient controls referred to the central laboratory of transplantation were enrolled. Stool sample was obtained from all participants and direct examination, concentration, color-blending and culture were performed using standard Methods. **Results.** The prevalence of bowel contamination with parasites and fungi in transplant recipients were 33.3% and 58.7%, and in healthy controls were 20.0% and 51.1%, respectively ($P > .05$). *Entamoeba coli* was the most common parasitic contamination with an estimated prevalence of 9.3% in transplant and 6.7% in control groups. *Candida* species were the most prevalent fungal contaminations and were found in 22.0% of transplant patients and 24.4% of healthy controls. Co-infection with two or more fungi was observed in 14.8% of transplant patients and 3.4% of controls ($P < .001$).

Conclusions. Although the prevalence of parasitic and fungal contaminations were comparable in two groups, high contamination rate especially co-infection with multiple fungi in transplant recipients warrants for pretreatment evaluation of these patients. However,

the pathogenicity of these contaminations needs further assessments.

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A Comparison Between the Levels of Cyclosporine C0 and C2 in Renal Transplanted Children

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Introduction. Cyclosporine A, with individual varieties in absorptive properties, needs a separate dose adjustment for each patient.

Methods. In a prospective design, from October 2004 to June 2005, 64 renal transplanted children, who had renal transplantation at least 3 months before, at Namazee Hospital, were enrolled in our study. Immunosuppressive regimen consisted of Cyclosporine and prednisolone plus Cellcept or Immuran. Data regarding GFR, serum creatinine, electrolytes, lipids and C0 and C2 levels was collected at beginning, in one-month, and five-month intervals. Cyclosporine was adjusted to 100 to 250 ng/mL based on C0 level. Patients were divided into two C0 (< 100 and ≥ 100 ng/mL) and two C2 (< 800 and ≥ 800 ng/ml) subgroups.

Results. Mean creatinine at the end of study was statistically similar to values at beginning (1.27 ± 1.08 versus 1.24 ± 0.63 mg/dL). The same was true for GFR (84.91 ± 27.03 v/s. 78.22 ± 27.08 mL/min), C0 (127.56 ± 51.15 versus 128.89 ± 75.38 ng/mL) and C2 levels (569.96 ± 195.82 versus 529.22 ± 276.71 ng/mL). C0 level was found to be correlated to C2 ($r = 0.74$, $P = .01$). In addition, C2 level was correlated to cyclosporine dosage ($r = 0.52$, $P = .01$). However, C0 level was negatively correlated to creatinine ($r = -0.07$, $P < .05$). The coefficient of variation of the three samples of each patient was 10.89% for C0, 8.94% for C2 while the drug dosage kept constant.

Conclusions. Similar creatinine levels, drug dosage, and complications of C0 and C2 subgroups may be due to dependence of renal function to several factors other than cyclosporine dosage. Regarding coefficient of variation, C2 was more accurate and reliable than C0 level.

As there was no significant difference in mean C0 and C2 levels, and renal function at beginning and the end of the study, there seems to be no need to check C2 levels after renal transplantation.