

Nephrology & Urology Abstracts

Correlation among Cystatin C-based formula, Schwartz formula and creatinin urinary clearance in glomerular filtration rate (GFR) estimation in 2-14 year children with kidney diseases

Safaei Asl A, Heydarzadeh A, Enshaei M
Gilan University of Medical Sciences

Background: Assessment of glomerular filtration rate(GFR) is an important tool for monitoring renal function. Regarding to particular difficulties in measuring 24 hour urinary creatinine clearance and limitations in available methods, we intended to calculate GFR by cystatin C (Cys C) based formulas and determine correlation rate of them with current methods.

Methods: We studied 72 children(38 boys and 34 girls) with several renal disorders such as reflux nephropathy, nephrotic syndrome, renal malformation, obstructive uropathy and hereditary renal disease. The 24 hour urinary creatinine clearance was the gold standard method. GFR also was measured with Schwartz formula(current method in pediatrics) and Cys C-based formulas(Grubb, Simple, Hoek and Larsson). Then correlation rates of these Cys C-based formulas with the gold standard method and Schwartz formula were determined.

Findings: Using Pearson Correlation Coefficient there was positive correlation among all formulas and the standard method (R2 for Schwartz, Hoek, Larsson, Grubb and Simple formula was 0.639, 0.722, 0.705, 0.712, 0.722 respectively), and there was statistically significant correlation ($P<0.001$). Cys C-based formulas could predict the variance of standard method results with high power. On the other hand, these formulas had correlation with Schwarz formula by R2 0.62-0.65 (intermediate correlation). Also, using Linear Regression and calculating the constant, it revealed that Larsson, Hoek and Grubb formulas can estimate GFR amounts with no statistical difference compared with standard method; but Schwartz and Simple formulas overestimate GFR.

Conclusion: This study shows that Cys C –based formulas have strong relationship with 24 hour urinary creatinine clearance. So, it seems that with using these formulas, it is possible to determine GFR in children with kidney injury, easier and with enough correctness. Thereby the physician will be able to treat the renal disease or prevent its progression in early stages and improves the prognosis. Of course, we must emphasize that on the basis of this study, Schwartz and Simple formulas overestimate GFR.

Keywords: creatinine, glomerular filtration rate, Cystatin C

Allopurinol enhances the blood pressure lowering effect of enalapril in hyperuricemic adolescents with essential hypertension

Assadi F
Department of Pediatric Nephrology, Rush University Medical Center, Chicago, IL, USA

Background: Essential hypertension (HTN) is frequently associated with hyperuricemia in both adult and pediatric patients. Treating HTN with usual antihypertensive agents does not completely reduce cardiovascular risk related to

uric acid (UA) levels. Lowering UA with allopurinol may provide greater benefit than simply treating HTN.

Methods: Forty four adolescents, 12-19 years old, with newly diagnosed essential HTN and serum UA levels > 5.5 mg/dL participated in this study. Patients were excluded if they had stage-2 HTN, or known renal, cardiovascular, or endocrine dysfunction. Patients were randomized in two groups; group 1 patients ($n=20$) received enalapril 0.15 mg/kg once daily for 8 weeks and group 2 patients ($n=24$) received allopurinol 5 mg/kg twice daily plus enalapril 1.5 mg/kg once daily for 8 weeks.

Findings: The mean change in systolic BP for group 1 was 4.3 mmHg compared with 8.2 mmHg ($p<0.001$) for group 2, and the mean change in diastolic BP for group 1 was 2.4 mmHg compared with 6.3 mmHg ($p<0.006$). Eleven of the 20 participants (55%) in group 1 achieved normal BP while taking enalapril alone vs. 18 of the 22 participants (75%) in group 2 while taking allopurinol in combination with enalapril ($p<0.001$). The mean serum UA was 0.51 mg/dL in group 1 patients compared with 1.70 mg/dL in group 2 patients ($p<0.002$). Serum uric acid declined to <5.0 mg/dL in 8 of the 20 patients (40%) during treatment with enalapril compared with 23 patients (96%) on combination therapy. There were no specific drug adverse effects during the course of therapy.

Conclusion: Allopurinol in combination with enalapril lowers BP more effectively than enalapril alone in the hyperuricemic adolescents with stage-1 essential HTN by reducing serum uric acid level.

Keywords: Allopurinol, essential hypertension, hyperuricemia

Approach to prenatal hydronephrosis

Hajizadeh N
Children's Medical Center, Tehran University of Medical Sciences

Widespread antenatal screening has resulted to increased detection of anomalies of the kidneys and urinary tract. Fetal hydronephrosis(dilatation of the renal pelvis with or without dilation of the renal calyces) is a common finding on antenatal ultrasound examination occurring in 0.5 to 1 percent of pregnancies. Although renal pelvic dilatation is a transient, physiologic state in most cases, urinary tract obstruction and vesicoureteral reflux(VUR) can occasionally be causal. These conditions can prevent normal renal development and/or cause renal injury. Management approach of infants with prenatal hydronephrosis is based upon confirmation of persistent postnatal hydronephrosis and the predictive factors such as: the severity of the hydronephrosis, whether it is bilateral or unilateral, presence or absence of ureteral dilation, the history of amount of prenatal amniotic fluid volume, the presence of other findings in the urinary system, and whether progression occurs. Emergent factors are thinning of the parenchyma and/or cortical cysts which indicate injury or impaired development of the renal cortex. An echogenic renal cortex may mean renal dysplasia. Abnormalities of the bladder such as increased thickness and trabeculation of the bladder wall are consistent with obstructive uropathy distal to the bladder(eg, PUV). Postnatal follow-up includes ultrasound examination of the

kidneys and bladder in all affected infants. For unilateral hydronephrosis without antenatal bladder pathology, it performs at one week after birth. In infants with bilateral hydronephrosis and those with a severe hydronephrotic solitary kidney, it performs within 48 hours of birth. Voiding cystourethrogram (VCUG) performs in unilateral or bilateral persistent hydronephrosis, antenatally detected hydronephrosis which develops a urinary tract infection, hydroureteronephrosis, dilated, thick-walled bladder and dilated posterior urethra. Diuretic renography (DTPA) performs in moderate to severe unilateral or bilateral hydronephrosis which do not show VUR.

Keywords: Prenatal Hydronephrosis, Vesicoureteral Reflux, Urinary Tract Obstruction

Blood pressure and low birth weight infant

Nikavar A

Ali Asghar Hospital, Iran University of Medical Sciences

Both systolic and diastolic blood pressure (BP) increase during the first month of life. Low birth-weight infants have a lower mean BP than do term infants, but by 10 weeks of life this difference becomes negligible. BP increases more rapidly in preterm infants than term infants, especially in neonates with higher weight gain. Gestational age, birth weight, postnatal age and gender are considered the predictive factors of BP. But, some recent studies showed no significant difference in BP based on birth weight or length of the kidney. An inverse correlation has been reported between BP measurement and birth weight. Systolic BP is modestly higher in premature, VLBW, and low birth weight infants by school age and young adult life. Increased systolic and diastolic BP have been documented in extremely premature at corrected age of 2.5 years. Human nephrogenesis continues through the 3rd trimester of pregnancy, and during the 36th week of gestation. Premature delivery interrupts renal development resulting to low nephron number at birth, small kidney, increased single nephron GFR, hyperfiltration, augmentation of glomerulosclerosis, subsequent hypertension and cardiovascular or chronic kidney disease later in life. Proposed mechanisms of hypertension include increased sympathetic activity, increased arterial stiffness and vascular resistance, attenuation of kidney development, accelerated postnatal growth in weight and length, alteration of angiotensin activity, proliferation of juxtaglomerular cells, and increased salt sensitivity. In a recent report, BP of small for gestational term infants was compatible with healthy controls. Therefore, monitoring of BP and proteinuria is recommended in low birth weight preterm infant before and after NICU discharge, and in children less than three years of age.

Keywords: Blood Pressure, Hypertension, Low Birth Weight

Screening of microscopic hematuria in school age children in the Gorgan city

Moghtaderi M, Noohi A, Safayeian B, Abbasi A, Meherkash M

Children Medical Center, Tehran University of Medical Sciences

Background: Screening of healthy children for abnormalities in the urine has shown that microscopic

hematuria is common and often transient. Hematuria has been a concern of physicians since antiquity, because a number of genitourinary tract diseases and conditions, as well as systemic conditions with renal involvement, produce blood in the urine. It may indicate a preventable serious problem that screening programs can detect at an early stage.

Methods: 3000 school aged children who deserved to participate in study picked up and a fresh morning urine sample tested with a standard test tape. Positive cases then had a second urine examination and afterwards, the positive cases were evaluated by sonography and special urine and blood exam and some cases CT scan.

Findings: This study was done on primary school and middle school age children (6-14 year old) in Gorgan, Iran. Of these, 1200 were girls and 1800 were boys. At initial step, 208 (6.8%) had positive dipstick test for blood, which decreased to 35 (1.16%) at second step. Of these, 27 were girls (77.1%) and 8 were boys (22.9%). 9 cases canceled their participation and in the reminded 26 cases, 12 children had normal findings, 13 had nephrolithiasis and in 1 case there was a large cystic lesion on sonography. This case had undergone surgical operation and finally the pathologic study revealed "oncocystoma".

Keywords: microscopic hematuria, screening, children

Prevalence of generalized joint hypermobility in patient with vesicoureteral reflux

Pournasiri Z¹, Madani A², Zandi H²

1. Shahid Beheshti University of Medical Sciences

2. Tehran University of Medical Sciences

Background: The aim of this study was to determine the prevalence of generalized joint hypermobility (GJH) in patient with vesicoureteral reflux (VUR).

Methods: This was a cross-sectional study on the 313 patients, 3 to 15 year-old children, with history of urinary tract infection (UTI) attending Loghman Hospital from April 2010 to April 2011. We evaluated the generalized joint hypermobility according to Beighton scores among the patients; then urinary tract sonography and cystography was done if it was indicated. Our patients were divided into two groups, group 1 without urinary tract abnormality and group 2 with primary vesicoureteral reflux compared them with the control group.

Findings: In the control group, 37.2% and in the group 1 45.7% had hypermobility. Statistically there was no significant difference ($P < 0.2$, odds ratio = 1.42, CI 95% 0.811-2.487). In the control group, 37.2% and in group 2, 62.3% had hypermobility. Statistically there was a significant difference ($P < 0.001$, odds ratio = 2.79, CI 95% 1.613-4.823). 26 cases of the children with mild urinary reflux, 44.1% of the patients with moderate urinary reflux and 60.5% of the patients with severe urinary reflux had hypermobility. Statistically there was a significant relation ($P < 0.003$).

Conclusion: In conclusion, the prevalence of GJH in the group with UTI record without VUR had no difference with the control group; while its prevalence in the group with UTI and VUR was more and the prevalence of hypermobility was increased while the reflux severity increased.

Keywords: Vesico Ureteral Reflux, Urinary Tract Infection, Hypermobility Syndrome

A comparison of radiographic cystography (VCUG) and isotope cystography (DRNC) in patients with UTI and normal VCUG

Dalirani R, Sharifian M, Mohkam M, Ghahsareh Ardestani A

Shahid Beheshti University of Medical Sciences

Background: Vesicoureteral Reflux (VUR) is the back flow of urine from the bladder into the ureter and kidney mainly due to the failure of the normal function of valve at the junction of the ureter to the bladder. Ureteral reflux is an important risk factor for renal scarring in patients with or without urinary tract infection. In long term, renal scarring may lead to secondary hypertension and chronic renal failure. Early detection of VUR has an important role in the prevention of these complications. Radiographic cystography(VCUG) and isotope cystography(DRNC) are two common methods for detection of VUR. In some patients with strong evidence of VUR in clinical finding, ultrasound and DMSA, VCUG is normal. For this reason and the overall higher sensitivity of DRNS in detection of reflux, this study compared the result of VCUG and DRNC in patients who had evidence of VUR, but had normal VCUG.

Methods: In this study, 35 children (5 males, 30 females) with urinary tract infection and normal VCUG who had hydroureteronephrosis in ultrasound(without evidence of obstruction in the urinary tract), significant involvement in DMSA scan or recurrent urinary tract infections had undergone isotope cystography (DRNC).

Findings: After DRNC among 70 ureteral units, reflux was observed in 33 units. There were mild reflux in 17 units(51%), moderate reflux in 14 ureteral units(42%) and sever reflux in 2 units(6%). In 29 units of the 33 refluxing units, positive findings compatible with renal involvement in DMSA renal scan were observed.

Conclusion: This study showed that the DRNC is more sensitive in detecting VUR than VCUG. Therefore, in patients with normal VCUG and high suspicion of VUR using DRNC is helpful. Although larger studies are necessary for this recommendation.

Keywords: VCUG, DRNC, Cystography

Evaluation of urinary and serum concentration of Interleukin-6 (IL-6) in children with urinary tract Infection: differentiation between pyelonephritis and acute cystitis

Otukesh H, Javadi Larijani F, Fereshtehnejad SM, Hosseini R, Salman Yazdi R

Children Medical Center, TehranUniversity of Medical Sciences

Background: Pyelonephritis is one of the most serious and common infectious diseases in children. Its renal infection and scarring is the leading cause of end stage renal disease (ESRD) in some parts of the world including Iran. Serum and urinary levels of interleukin-6(IL-6) have been reported to be high in acute pyelonephritis by some of the previous studies. This study was conducted to examine whether serum and urinary IL-6 is high and can be used as a screening test for acute pyelonephritis.

Methods: This prospective, analytical, cross-sectional study was conducted on 40 children with fever, clinical signs and symptoms of urinary tract infection and positive urinary culture who were referred to Ali Asghar Children's

Hospital in 2008. Regarding the results of DMSA scan in these children, urinary and serum concentrations of IL-6 were compared in two groups of cystitis(n=20) and pyelonephritis(n=20). For data analysis, independent t-test, Mann-Whitney U-test, Wilcoxon rank, correlation and Receiver Operating Characteristics Curve (ROC) analysis were used.

Findings: The mean of baseline urinary concentration of IL-6 was significantly higher in children with pyelonephritis [11.53 (SD=9.51) pg/dl] than the ones with cystitis[4.00 (SD=2.18) pg/dl] (P<0.002). Also, the mean of serum concentration of IL-6 in acute phase of the disease was significantly higher in children with pyelonephritis[15.59 (SD=8.40) pg/dl] than the ones with cystitis[3.21 (SD=4.58) pg/dl] (P<0.001). The optimal cut-point of 6.60 pg/dl for urinary concentration of IL-6 has the sensitivity and specificity of 70% and 95% to differentiate acute pyelonephritis patients from acute cystitis respectively. In addition, serum concentration of 9.25 pg/dl has the sensitivity and specificity of 80% and 95% to differentiate these two groups of children.

Conclusion: It seems that urinary and serum concentrations of IL-6 possess a high diagnostic value to differentiate pyelonephritis from cystitis and could be used as an important index to diagnose upper urinary tract infection from the lower one in the acute phase of the disease among children.

Keywords: Interleukin-6, Acute Pyelonephritis, Acute Cystitis

Effect of prophylactic antibiotics in patients with vesicoureter reflux

Ghasemi K

Hormozgan University of Medical Sciences

Background: Vesicoureteral reflex (VUR) is the most important predisposing factor in urinary tract infection. For prevention of UTI in children with VUR, prophylactic antibiotics are used, but maybe accompany with uncompliance of the parents and also it must use for long time. So, this study aimed to evaluate the breakthrough infection in patients who got prophylactic antibiotic.

Methods: This semi experimental study was done in 114 children with VUR. None of them have had any episode of UTI since six months ago. They were divided in two groups, continuing group or discontinuing group of prophylactic drugs and were followed for at least 15-12 months. Then the risk and episode of breakthrough UTI were compared in 2 groups. The data were analyzed by SPSS and P<0.05 was determined as significant.

Findings: Mean age of patients were 4.03 years. Seventy four(64.9%) children were girls and others (35.1%) were boys. According to the study, 58% of patients were in grade 1 and 2 VUR and others in grade 3, 4, or 5 VUR. Also the risk of breakthrough UTI was 3 times in girls. There was no significant differences in breakthrough of urinary tract infection in patients with VUR(1,2) that use antibiotic and those who did not, but there was significant differences in patients who were in grade 3, 4, or 5 of VUR that received prophylactic antibiotic(p < 0/01).

Conclusion: we recommend prophylactic antibiotic in patients with high grade VUR (3, 4, or 5), because the risk of breakthrough infection was higher in this group whom did not received prophylactic antibiotic.

Keywords: Antibiotics, Children, Urinary Tract Infection, Vesicoureteral Reflux, Relapse, Prophylaxis

Screening of renal diseases in the first primary school children in Shiraz

Shajari A¹, Fallah Zadeh MH², Shajari H³, Mahdavi A

1. Department of Nephrology, Shahvali Hospital, Yazd Islamic Azad University of Medical Sciences

2. Department of Nephrology, Namazi Hospital, Shiraz University of Medical Sciences

3. Department of Neonatology, Shariati Hospital, Tehran University of Medical Sciences

Screening interval urinalysis has long been considered essential to pediatric health care. A urinalysis is recommended at four times: in infancy, early childhood, late childhood, and in adolescence. Several chemical parameters can be measured as commercially available in dipstick test. This test is relatively inexpensive and it takes less than 5 minutes to be completed. In a 3 month follow up program, mass urine screening tests were conducted in four educational areas of Shiraz, Iran, randomly in 1601 students. The questionnaire was filled by their parents and general physical exam was done by general physicians. Fresh urine specimens were screened using a dipstick for chemical analysis including: protein, glucose, blood, urobilinogen, leukocyte-esterase, bilirubin and nitrite. In those who had urinary abnormalities by dipstick or who were symptomatic or had physical abnormalities further investigations were carried out. In 1601 apparently healthy children (809 boys, 799 girls) urinary abnormalities were detected in 76 (4.7%) subjects at first screening. There were urinary symptoms in 63 patients. The most common form of urinary abnormalities was proteinuria (56 subjects, 3.6%), followed by hematuria (1%), nitrite (0.6%), leukocyte esterase (0.4%) and glucosuria (0.2%). Abnormality in sonography of kidneys were found in 22 cases. Positive dipstick findings had significant correlation with abnormal ultrasound findings. This study showed that it is possible to screen a large population of patients at relatively low cost, providing the framework for further action that may help in the prevention and timely diagnosis of renal diseases.

Mass screening, Urine screening at elementary school, **Keywords:** Hematuria, Proteinuria, Frequency of Urine Abnormalities

Predictive accuracy of beta-2 microglobulin for kidney injury in children with acute pyelonephritis

Maryam Esteghamati, Gholamreza Kangari, Kambiz Ghasemi, Hamidreza Mahboobi

Hormozgan University of Medical Sciences

Background: Urinary Tract Infection (UTI) is one of the most common infections in childhood and infancy. Renal scar is the important complication of pyelonephritis. The aim of current study was to evaluate the diagnostic accuracy of beta-2 microglobulin test in detection of renal scar in children with acute pyelonephritis.

Methods: Eighty-nine children between 2 months to 14 years old with the diagnosis of acute pyelonephritis referred as outpatient or for hospitalization to Koodakan hospital in Bandarabbas, southern Iran who hadn't past history of infection in urinary system studied. A standard urine sample according to patients' age was obtained for Urine culture, urine analysis, and $\beta 2$ microglobulin tests. Also a blood sample was obtained for CBC, creatinine, BUN,

CRP, ESR, WBC and electrolytes tests. All patients were undergone DMSA scan. Data was analyzed using SPSS 20.0 and MedCalc software.

Findings: The cut off point for beta-2-microglobulin for prediction of positive DMSA scan was >0.8 with sensitivity of 40.91% (95% CI 26.3–56.8) and specificity of 84.09% (95% CI 69.9–93.4), Positive Predictive Value of 72% (95% CI 50.6–87.9) and Negative Predictive Value of 58.7% (95% CI 45.6–71). The cut off point for WBC for prediction of DMSA scan was >12900 with sensitivity of 45.45% (95% CI; 30.4–61.2%) and specificity of 84.09% (95% CI 69.9– 3.4), PPV of 74.1% (95% CI; 53.7–88.9%) and NPV of 60.7% (95% CI; 47.3–72.9). The cut off point for ESR for prediction of DMSA scan was >56 with sensitivity of 31.82% (95% CI; 18.6–47.6%), specificity of 97.62% (95% CI; 87.4–99.9), PPV of 93.3% (95% CI; 68.1–99.8), NPV of 57.7% (95% CI; 45.4–69.4).

Conclusion: Beta-2 microglobulin isn't enough sensitive and specific to be used as a diagnostic marker for prediction of renal scar. Other common markers such as ESR, WBC count, and CRP can be used in combination to predict kidney injury in UTI children.

Keywords: Beta-2 microglobulin, acute pyelonephritis, urinary tract infection, sensitivity, specificity

Evaluation of calcium and citrate levels as well as pH of the urine in children with nephrolithiasis

Akhavan Sepahi M

Department of pediatrics, section of nephrology, faculty of Medicine, Qom University of Medical Sciences

Background: Prevalence of urolithiasis in childhood is increasing. Many children with stone disease have a metabolic abnormality. Hypercalciuria and hypocitraturia are considered the most important risk factors for urolithiasis. The main aims of this study were to assess the calciuria, citraturia and urinary pH and to determine whether urinary Ca concentration is a helpful biomarker in metabolic evaluation of children with renal stone.

Methods: This cohort study was performed at Qom University of Medical Sciences on 100 pediatric patients with documented urolithiasis. We collected 24-h urine samples from 100 stone-forming children and adolescents and from 121 healthy controls. Urinary Calcium, pH, citrate and oxalate were assessed and compared between the two groups. Data were analyzed using SPSS-13 software.

Findings: Patient's age was ranged from 20 days to 14 years old with mean age of 3.32 ± 2.53 years; 54 patients were males (54%) and 46 patients were females (46%). In both stone-formers and controls, hypercalciuria was inversely related to citraturia and urinary pH. Metabolic disorder was detected in 95% of patients; the most prevalent urine metabolic abnormalities were hypocitraturia (56.8%), hypercalciuria (29.4%), hyperuricosuria (26.3%), hyperoxaluria (14.7%), phosphaturia (8.4%) and cystinuria (6.3%).

Conclusion: This study similar to other studies in Iran have shown that the prevalence of hypercalciuria is significantly higher compared to other countries; it may be associated with excessive intake of calcium and sodium. Compared to controls, stone-formers with hypocitraturia demonstrated a higher urinary Ca concentration, but this was proportional to calciuria. However, the Ca/Citrate ratio may be a useful clinical tool in evaluating children with urolithiasis.

Keywords: Calciuria, Citraturia, Children, Renal Stones

The comparison between new and old guidelines of American academy of pediatrics regarding to urinary tract infection

Badeli H¹, Hassanzadeh Rad A^{1,2}

1. Pediatrics Growth Disorders Research Center, 17 Shahrivar Hospital, Guilan University of Medical Sciences

2. Linguistics Department, Literature Faculty, Tehran University

Background: Urinary tract infection (UTI), a relatively common cause of fever in infancy, may cause permanent renal damage. As the diagnosis and management of urinary tract infections (UTIs) in young children are clinically challenging, American academy of pediatrics published two latest version of guidelines and we aimed to compare new and old guidelines of American academy of pediatrics regarding to UTI in febrile infant with no apparent source of infection.

Methods: Investigators assessed full version of both guidelines and compared the 1999 version with the latest published AAP2011 based on diagnosis, treatment and follow-up of UTI in febrile 2-24 month infants.

Findings: In previous version, symptoms and signs of UTI during infancy were unspecified and solely urine specimen could be reliable for diagnosis if it was performed by invasive methods such as suprapubic aspiration (SPA) and catheterization. However, these methods could cause delayed treatment and consequently renal damage; therefore, this new guideline 2011 had been published after AAP1999 and it has been recommended to be used for 2-24 month febrile infants with no apparent source of infection. In new guideline, they didn't make difference in the effectiveness of oral or parenteral therapy in treatment and recommended renal-bladder ultrasound (RBUS) to assess the parenchymal renal size and urologic disorder. Although, they suggested clinicians not to perform VCUG after first febrile UTI. However, if RBUS demonstrated hydronephrosis, scarring, atypical or complex clinical circumstances and obstructive uropathy, it could be done. **Conclusion:** Although, recent literature agrees with some parts of 1999 report, However, the differences are valuable and it seems that the newest version is more applicable than previous version.

Keywords: Urinary Tract Infection, Vesicoureteral Reflux, Voiding Cystourethrography, Antimicrobial, Prophylaxis

گزارش عوارض مصرف باکلو فن در زمینه نارسایی کلیوی در یک کودک

مجید ملکی، آنوش آذر فر

مرکز تحقیقات سلامت کودکان، بیمارستان کودکان تبریز

زمینه: باکلو فن یکی از داروهای پر مصرفی است که عموماً در افراد مبتلا به بیماری های عصبی مصرف می گردد و آگاهی به عوارض جانبی آن می تواند از بروز حوادث خطرناکی از سوء مصرف آن جلوگیری کند.

معرفی مورد: در این گزارش کودک ۶ ساله مبتلا به نارسایی کلیوی مزمن پس از مصرف دوز ۱ میلی گرم بازای کیلوگرم وزن بدن در کمتر از ۱۲ ساعت دچار اختلال هوشیاری، کاهش رفلکسها و دیستونی و آتاکسی گردیده است.

نتیجه گیری: اطلاع از عملکرد کلیوی پیش از تجویز باکلو فن و آگاهی دادن به بیماران به عوارض این دارو بخصوص در افراد پیر دارای بیماری های عصبی و

افرادی با زمینه نارسایی کلیه ضروری است. تشخیص سریع و قطع دارو و توجه به نارسایی تنفسی ناشی از مصرف بیش از حد دارو حیاتی است.

کلمات کلیدی: باکلو فن، کلیه، عوارض

مایع درمانی در نارسایی حاد کلیه و سایر شرایط بحرانی

احسان ولوی

بیمارستان کودکان ابوذر اهواز

زمینه: نارسایی حاد کلیه (ARF) یک سندروم کلینیکی قابل برگشت است که در آن عملکرد کلیوی به طور ناگهانی و تقریباً کامل در طول چند ساعت تا چند روز مختل می گردد که در این حالت نارسایی در دفع مواد زائد نیترژن دار و عدم تعادل آب و الکترولیت ها ایجاد می گردد. در این حالت حجم ادرار در اکثر موارد کاهش می یابد (زیر یک سی سی بر حسب وزن) ولی گاه ممکن است حجم ادرار نرمال و یا افزایش یافته باشد. در کودکان مبتلا به نارسایی حاد کلیه، کاهش حجم ادرار در اکثر موارد به دلیل کاهش حجم داخل عروقی بوده و در موارد کمتری به دنبال اشکالات فیلتراسیون و آسیب های گلو مریولی دیده می شود. تنظیم نا مناسب میزان دریافت مایعات داخل عروقی گاه باعث تشدید نارسایی کلیوی شده و گاه می تواند علائم Overload را در بیمار بوجود آورد بنابر این قبل از تجویز مایعات در این بیماران لازم است علت نارسایی حاد کلیه و وضعیت حجم داخل عروقی بیمار ارزیابی گردد. پزشک همواره می تواند با استفاده از شرح حال و معاینه فیزیکی و با به کار گیری آزمایش آنالیز ساده ادرار و تنها با دانستن انواع و علل نارسایی حاد کلیه، در کوتاه ترین زمان بر بالین بیمار به علت و پاتوفیزیولوژی بیماری پی برده و مایع درمانی را با میزان مناسب شروع نماید. اقدامات و روش ها: ۱- در مواردی از نارسایی پیش کلیوی که شامل کاهش حجم ناشی از دفع گوارشی (استفراغ، اسهال، ساکشن NGT)، خونریزی و دفع کلیوی (دیورتیک ها) است بعد از تجویز فوری 20-30 cc/kg از سرم نرمال سالین و خروج از وضعیت شوک، تامین حجم باید بر اساس تامین میزان Therapy Deficit + Ongoing loss + Maintenance باشد که حجم بالایی را شامل می شود و لازم است این حجم به بخشهای ۴ تا شش ساعته تقسیم شود و در انتهای هر دوره ارزیابی ها از وضعیت هیدراتاسیون به عمل آید. ۲- شایعترین علت نارسایی داخل کلیوی نکروز حاد توبولی است و شایعترین علت آن: ایسکمی طولانی مدت کلیه ناشی از کاهش حجم داخل عروقی و نارسایی پیش کلیوی شدید قبلی است و در این موارد لازم است حجم داخل عروقی به شکل بالا تامین گردد. ۳- دومین علت نکروز حاد توبولی عوامل نفروتوکسیک از قبیل: آنتی بیوتیک ها، آمینوگلیکوزیدها، جنتامایسین، فلزات سنگین، حلال و مواد شیمیایی، ضد التهاب های غیر استروئیدی و نیز میوگلوبینوری (تروما، تصادف رانندگی و سوختگی ها) و هموگلوبینوری (واکنش ترانسفوزیون، آئمی همولیتیک) است که در اکثر موارد با حجم ادرار طبیعی یا بالاتر همراه است. بنابراین در همه این موارد نیز سرم بیمار به صورت یک تا یک و نیم برابر Maintenance Therapy تنظیم گردد و تنها در موارد بسیار پیشرفته که با الیگوری همراه است و علائم Overload مشاهده می شود لازم است سرم بیمار از فرمول Insensible Water loss + Urine out put بدست آید و بعد از شروع فاز بهبودی و پلی اوری حجم مایع را به تدریج افزایش داد. ۴- در موارد ازوئمی رنال بدنبال آسیب های گلو مریولی و عروقی کلیه از جمله: گلو مریولو نفریت حاد، سندرم همولیتیک اورمیک و ترومبوز شریان یا ورید کلیه که در اکثر موارد با علائم Overload همراهی دارند لازم است در ابتدا مصرف مایعات به شدت محدود گردد و بعد از بهبود Overload مایعات به صورت Insensible Water loss + Urine out put تجویز شود. ۵- در موارد نفروپاتی اسید اوریک و نیز نفریت بینابینی نیز که با حجم ادرار طبیعی یا بالاتر همراه هستند لازم است سرم بیمار به صورت یک تا یک و نیم برابر Maintenance Therapy تنظیم گردد. ۶- در موارد نارسایی کلیوی بدنبال

اختلال عملکرد قلبی ناشی از MI، نارسایی احتقانی قلب، دیس ریتمی و شوک کاردیوژنیک، درمان بیماری زمینه ای و مصرف داروهای اینوتروپ مثبت موجب بهبود فعالیت کلیوی خواهد شد و در موارد وجود علام نارسایی قلبی لازم است در ابتدا مصرف مایعات به شدت محدود گردد و بعد از بهبود آن باید به تدریج سرم بیمار را به Maintenance Therapy $\times 2/3$ افزایش داد. ۷- در موارد نارسایی پس کلیوی و انسداد مجاری ادراری در اثر: سنگ، تومور، هیپرتروفی خوش خیم پروستات، تنگی و لخته خون، لازم است سرم بیمار از فرمول $\text{Insensible Water loss} + \text{Urine out put}$ بدست آید.

نتیجه گیری: برای درمان مناسب در بیمار مبتلا به نارسایی حاد کلیوی باید تجویز مایعات بر اساس تشخیص علت زمینه ای باشد و در بسیاری از موارد لازم است از مایعات با حجم بسیار بالا بهره برد. بعلاوه بررسی الکترولیت های سرم از جمله سدیم، پتاسیم، کلسیم و فسفر و نیز وضعیت گاز های خونی در این بیماران الزامی است.

کلمات کلیدی: نارسایی حاد کلیه، کودک، مایع درمانی