investigate whether aliskiren regulates renal aquaporin expression and prevents lithium-induced nephrogenic diabetes insipidus. Mice injected with aliskiren developed decreased urine output and increased urine osmolality when compared with controls. Aliskiren significantly increased AQP2 protein abundance in the kidney inner medulla. Immunohistochemistry and immunofluoresence showed increased apical and intracellular labeling of AQP2 in collecting duct principal cells of kidneys in mice treated with aliskiren. In lithium-treated mice, aliskiren prevented urinary concentrating defect and improved the downregulation of AQP2 protein abundance in inner medulla of the kidney. In primary cultured rat inner medullary collecting duct cells, aliskiren dramatically increased AQP2 protein abundance which was significantly inhibited either by PKA inhibitor H89 or by adenylyl cyclase inhibitor MDL12330, indicating an involvement of the cAMP signalling pathway in mediating aliskiren-induced increased AQP2 expression. In conclusion, the direct renin inhibitor aliskiren upregulates AQP2 protein expression in inner medullary collecting duct principal cells and prevents lithium-induced nephrogenic diabetes insipidus likely via PKA-cAMP pathways.

http://dx.doi.org/10.1016/j.hkjn.2015.09.036

0317
Whole Genome Sequencing Identifying Causative Gene in a Familial Focal and Segmental Glomerulosclerosis

Q. Wang, M. D. Liu, J. Y. Zhao, Y. Q. Chi, Y. Li, Y. Li
Department of Nephrology, Third Hospital, Hebei Medical University, Shijiazhuang, Hebei, China

Objective: Whole genome sequencing was preceded in a familial focal and segmental glomerulosclerosis (FSGS), then multi-step screening was made for the data from sequencing to choose the candidate genes, provide the theoretical basis for early diagnosis and accurate treatment of FSGS.
Methods: We chose 2 patients who had been identified as FSGS and their mother from a family. The peripheral blood was obtained to extract DNA from the three using the QIAquick Gel Extraction kit and then whole genome sequencing using the Illumina HiSeq X Ten. The result were filtered against the human databases of HAPMAP, dbSNP138 and 1000 Genome Project, and common variations which had been reported were wiped out, then non-synonymous variants in exonic and splicing regions were retained. Using SIFT and Polyphen-2 software to predict the influence in protein function of the variations and candidate genes was selected initially. And then query OMIM, GO, KEGG pathway databases to analyze its biological characteristics and the potential mechanism.
Results: By sequencing, we got four types of variant. The numbers of SNVs were 3038061, 3132594 and 3037609 SNVs, the numbers of InDels were 401259, 432406 and 398040, the numbers of SVs were 2917, 2211 and 3088, and the numbers of CNVs were 135, 211 and 91. After multi-step screening, with 54 SNVs and 455 InDels are shared by the two patients. Combining the non-synonymous variation from the three that patients with homozygous or compound heterozygous variation and their mother with heterozygous variation, 19 genes (KDM4A, TCF7L1, ADRA2B, KIF1A, TOP2B, GPR115, AK9, KCNT1, WDR96, ZNF384, KRT3, DDX55, ADCK1, TIPIN, JMJD8, STUB1, FAM83G, SLC5A10, SH3BGR) were screened out.
Conclusion: Through whole genome sequencing on an autosomal recessive pedigree of FSGS, we got 19 genes, which are different from the previous reports. It suggests that novel causative genes exist in this pedigree and more investigation is necessary.

http://dx.doi.org/10.1016/j.hkjn.2015.09.037

0319
Clinical and Pathological Features of Idiopathic Membranous Nephropathy in Young Adults and Analysis of Outcomes

Chenni Gao, Jing Xu, Xiaoxia Pan, Wen Zhang, Pingyan Shen, Yaowen Xu, Nan Chen
Ruijin Hospital, Shanghai, China

Objective: Idiopathic membranous nephropathy (IMN) is common in elderly patients. However, the prevalence in young adults is rising, and it is necessary to study their clinical and pathological features.
Methods: We retrospectively analyzed 77 young adult patients ($\leq$ 35 years old) and 160 elderly patients ($\geq$ 60 years old) hospitalized in our department between 2009 and 2014 with biopsy-proven IMN.
Results: The young adult IMN patients had a higher ratio of microscopic hematuria ($P < 0.01$) but lower ratio of kidney function deficiency ($P < 0.01$), hypertension ($P < 0.01$) and diabetes ($P = 0.021$) compared to elderly patients. Meanwhile, the renal pathological changes in young adult IMN patients are milder, as the incidence of interstitial fibrosis, infiltration of inflammatory cells and arterioles lesions are lower than in elderly patients ($P < 0.01$). The mean follow-up time was 27.3 months. Young adult group had a higher complete remission rate (48.1% vs. 36.3%, $P = 0.083$), although the total (complete and partial) remission rate was similar (75.3% vs. 71.3%, $P = 0.510$).
Conclusion: The young adult IMN patients have better renal function and milder renal pathological lesions compared to elderly patients. All of them have a rather good outcome but young adult group has higher complete remission rate.

http://dx.doi.org/10.1016/j.hkjn.2015.09.038

0322
Inhibition of Mitochondrial Complex-1 Prevents Downregulation of NKCC2 and ENaCα in Obstructive Nephropathy

Zhanjun Jia, Yue Zhang, Ying Sun, Guixia Ding, Songming Huang, Aihua Zhang
Nanjing Children's Hospital, Nanjing Medical University, Nanjing, China

Objective: Ureteral obstruction with subsequent hydronephrosis is a common clinical complication. Downregulation of renal sodium transporters in obstructed kidneys could contribute to impaired urinary concentrating capability and salt waste following the release of a ureteral obstruction. This study investigated the role of mitochondrial complex-1 inhibition in modulating sodium transporters in obstructive nephropathy.
Methods: Sodium transporters were determined by qRT-PCR, Western blotting, and immunohistochemistry. Mitochondrial DNA copy number (mtDNA), mitochondrial transcription factor (mTFAM), and mitochondria-encoded NADH dehydrogenase 1 (mtNd1) were identified. A number of known sodium modulators, including PGE2, ET1, Ang II, natriuretic peptides (ANP, BNP, and CNP), and nitric oxide synthases (iNOS, nNOS, and eNOS) were also examined.
Results: Following unilateral ureteral obstruction (UUO) for 7 days, sodium transporters including NHE3, α-Na-K-ATPase, NCC, NKCC2, p-NKCC2, ENaCα, and ENaCγ were remarkably reduced by 60—90% contrasting to unaltered expression of ENaCβ, as determined by qRT-PCR, Western blotting, and immunohistochemistry. This global down regulation of sodium transporters was accompanied by striking reduction of mitochondrial DNA copy number (mtDNA), mitochondrial transcription factor (mTFAM), and mitochondria-encoded NADH dehydrogenase 1 (mtNd1) indicating a mitochondrial abnormality. Strikingly, specific inhibition of mitochondrial complex-1 by rotenone (500 ppm in diet) completely abolished the downregulation of NKCC2, p-NKCC2, and ENaCα without affecting other sodium transporters. A number of known sodium modulators, including PGE2, ET1, Ang II, natriuretic peptides (ANP, BNP, and CNP), and nitric oxide synthases (iNOS, nNOS, and eNOS) were strikingly elevated by 3 to 80 folds except for nNOSin obstructed kidneys. After rotenone administration, only BNP (+80 folds)and iNOS (+4 folds) but not others were significantly reduced by 62% and 96%, respectively.
Conclusion: Taken together, these findings showed a substantial role of mitochondrial dysfunction in mediating the down regulation of NKCC2 and ENaCα in obstructive nephropathy, possibly via iNOS-derived nitric oxide and BNP.

http://dx.doi.org/10.1016/j.hkjn.2015.09.039

0323
1α,25-dihydroxyvitamin D3 Influences Expression of Ki67 and mTOR in Thy-1 Nephritis Rat

R. Yang[1], X. P. Yang[2], J. Suo[1]
[1]*College of Medicine, Shihezi University, Shihezi, China*
[2]*Department of Nephrology, The First Affiliated Hospital, School of Medicine, Shihezi University, Shihezi, China*

Objective: The aim of this research was to study the expression of Ki67 and mTOR in Thy-1 nephritis rat which used 1α,25-dihydroxyvitamin D3 (1,25(OH) 2D3), and its mechanism.

Methods: 90 healthy male SD rats were randomly divided into three groups: control group, model group, $1,25(OH)_2D_3$ group. Model group and $1,25(OH)_2D_3$ group were intravenously injected anti-Thy1 monoclonal antibody once via tail vein, the control group with normal saline. $1,25(OH)_2D_3$ group was given $1,25(OH)_2D_3$ 0.5 μg/day orally for 21 consecutive days, the other groups were given an equal volume of peanut oil. Six rats randomly selected from each group were killed on days 1, 3, 7, 14 and 21 after intervention. The samples of 24-hour urine were collected on the day before rats were killed to detect 24-hour urinary protein excretion. The renal tissue samples were separately stained with hematoxylin and eosin and PAS to determine the renal pathological variation, and detect the expression of mTOR and Ki67 by immunohistochemistry.
Results: Model group and $1,25(OH)_2D_3$ group rats after day 1 that produce a large amount of urine protein, model group after day 3 reached a peak; $1,25(OH)_2D_3$ group rats at 1, 3 and 7 days of urine protein levels were significantly lower than model group ($P < 0.05$). Compared with model group, the pathological damage of $1,25(OH)_2D_3$ group was alleviated in 3 and 7 days in renal tissue ($P < 0.05$). The expression of Ki67 and mTOR in $1,25(OH)_2D_3$ group was reduced ($P < 0.05$).
Conclusion: These data suggest that $1,25(OH)_2D_3$ can inhibit the proliferation of glomerular mesangial cells in Thy-1 nephritis rat. Its therapeutic mechanism may be associated with reduced expression of Ki67 and mTOR.

http://dx.doi.org/10.1016/j.hkjn.2015.09.040

0324

Type III Crescents Glomerulonephritis Associated with Infective Endocarditis in Which Renal Function was Recovered by Heart Valve Replacement

Yanhui Zhang, Caili Wang
The First Affiliated Hosptial, Baotou, Inner Mongolia, China

Objective: To study the relationship of infective endocarditis with crescents glomerulonephritis
Case Summary: A 40-year-old woman was admitted to our hospital because of edema, fatigue, and not being able to lie down at night for a month in October 2007. Laboratory values included serum creatinine 678 μmol/l, urinalysis showed 3+ proteinuria and 3+ hematuria (deformation of red blood cells in urine), urine protein quantitative 3.1 g/24 hours. Antinuclear antibody and anti-DNA antibody titers were within the normal ranges. Anti-glomerular basement membrane antibody was negative and antineutrophil cytoplasmic antibodies showed p-ANCA 1:3.2, MPO + −. Echocardiography showed dense vegetation at the mitral valve. Double kidney size was normal. In the renal biopsy specimen: by immunofluorescence, negative deposit. Light microscopy of the renal biopsy: capillary loops of glomeruli were damaged seriously, fibrocellular crescents were seen in 6 and cellular crescents in 8 of 25 glomeruli, small fibrocellular crescents were seen in 1 and small cellular crescents in 2 of 25 glomeruli. She was diagnosed with Type III crescents glomerulonephritis and infective endocarditis. The patient refused cardiac surgery for economic reasons. She was treated with large dose of glucocorticoid and cyclophosphamide. 5 years after admission, clinical data were serum creatinine level 200 μmol/l; urea nitrogen and urinary protein and blood were each 2+. Follow-up period occurred in patient with heart failure recurrent. Surgery for replacement of mitral valve and pulmonary valve were performed. Three months after discharge and being followed-up at our hospital, her serum creatinine fell to normal. Following-up for 2 years, serum creatinine and heart function were stable.
Conclusion: Patients with infective endocarditis will develop rapidly progressive GN.

http://dx.doi.org/10.1016/j.hkjn.2015.09.041

0345

Clinical Analysis of Hepatitis B Virus-associated Glomerulonephritis with Multi-target Therapy

Li Wang, Yanyan Yang, Lifang Tian, Xiaoli Cheng, Xiaoqin Ma, Tian Yao, Baosong Gui
Department of Nephrology, The Second Affiliated Hospital of Xi'an Jiaotong University, Xi'an, China

Objective: To investigate the efficacy and safety of multi-targets therapy in the treatment of hepatitis B virus-associated glomerulonephritis (HBV-GN).
Methods: Thirteen HBV-GN patients who showed poor curative effects and had severe proteinuria after treatment with entecavir and liver protective drugs were randomly divided into two groups: multi-target group (n = 7) and control group (n = 6). The patients in the multi-target group were treated with a combination of prednisone (10 mg, q.d), mycophenolate mofetil (MMF, 0.5 g, b.i.d) and tacrolimus (1 mg, b.i.d), while the patients in the control group were treated with prednisone (0.8 mg/kg/d) and cyclophosphamide (0.4 g, ivp, q.d × 2 days/month). Clinical efficacy, urine and blood biochemical indexes in each patient were evaluated after 3-month treatment.
Results: After 3-month treatment, the effective rates were 85.71% (6/7) in the multi-target group and 83.33% (5/6) in the control group. There was no significant difference between the two groups. As to complications, two cases of pulmonary infection, one case of urinary tract infection, one case of liver dysfunction and one case of aleucocytosis were occurred in the control group, while there was only one case of herpes zoster in the multi-target group. The multi-target group had significantly fewer complications compared to the control group.
Conclusion: Low dosage of prednisone combined with MMF and tacrolimus has good curative effect and more security in treatment of HBV-GN.

http://dx.doi.org/10.1016/j.hkjn.2015.09.042

0366

Proximal Tubulopathy of Monotypic Immunoglobulin Light Chain Restriction

Yan Wang[1,2], Suxia Wang[1], Youkang Zhang[1]
[1]*Peking University First Hospital, Beijing, China*
[2]*Xijing Hospital, Shannxi, China*

Light chain proximal tubulopathy is a rarely reported entity associated with plasma cell dyscrasia, that classically manifests as proximal tubular dysfunction, even present with acquired Fanconi syndrome, and is characterized by the presence of mainly κ-restricted crystals in the proximal tubular cytoplasm. We herein present 4 cases of proximal tubulopathy that due to the immunoglobulin light chain. In all of the 4 cases, the prominent phagolysosomes and numerous irregularly shaped inclusions in the cytoplasm of the proximal tubules were identified on electron microscopy. 2 cases prestented multiple myeloma, nephrotic syndrome, Fanconi syndrome and elevated serum creatinine, on immunofluorescence and immune electron microscopy examination, monotypic light chain of the λ type was detected in the distal tubular casts, proximal tubular cytoplasmic lysosomes and crystal inclusions (Figure A-B). In the other 2 cases, only presented with mild to moderate proteinuria (0.61—2.592 g/24 hours), the renal funciton is normal, and the multiple myeloma and Faconi syndrome cannot be diagnosed. Monotypic light chain of the κ type was detected in proximal tubular cytoplasmic lysosomes