young ADPKD patients (mean age 16 ± 4 years) and correlated with renal and cardiac structure (measured by magnetic resonance imaging) and renal function. Because of the skewed distribution, renal and cyst volume, left ventricular mass index and serum VEGF were reported as $\log_{10}$. Serum $\log_{10}$ VEGF was positively correlated with total renal (P = 0.007) and cyst volumes (P = 0.003) and LVMI (P <0.0001) and negatively correlated with creatinine clearance (P = 0.022). In conclusion, the correlation between serum VEGF and both renal and cardiac disease severity reflects a possible role for angiogenesis in early progression of renal and cardiovascular disease in ADPKD.

Disclosure of Financial Relationships: nothing to disclose

F-PO1816

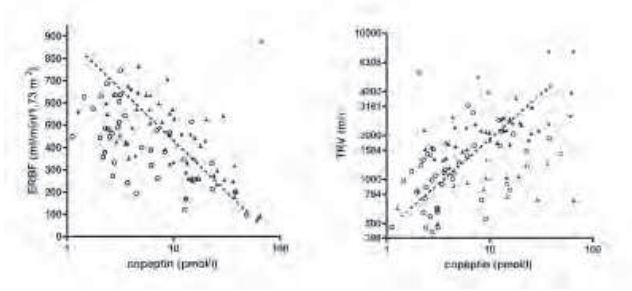
Copeptin, a Surrogate Marker of Vasopressin, Is Associated with Disease Severity in Autosomal Dominant Polycystic Kidney Disease Esther Meijer,[1] Stephan J. L. Bakker,[1] Gerjan Navis,[1] Joachim Struck,[2] Paul E. de Jong,[1] Ron T. Gansevoort.[1] *[1]UMCG, Netherlands; [2]BRAHMS, Germany.*

Experimental studies suggest a detrimental role for vasopressin (VP) in the pathogenesis of Autosomal Dominant Polycystic Kidney Disease (ADPKD). It is, however, unknown whether endogenous VP concentration is associated with disease severity in patients with ADPKD.

Because measurement of VP is problematic, we measured plasma copeptin concentration (a marker of endogenous VP levels) in 102 ADPKD patients (Ravine criteria) by immunoassay. Plasma- and urinary osmolarity were also measured. To assess disease severity, we measured glomerular filtration rate (GFR) and effective renal blood flow (ERBF) by continuous infusion of ^{125}I-Iothalamate and ^{131}I-Hippuran, resp., total renal volume (TRV) by MRI and 24h urinary albumin excretion (UAE) by nephelometry.

In these ADPKD patients (age 40±11y, 56% male, GFR 77±31 mL/min per 1.73 m^2, TRV 1.5 (0.9-2.2)L), median copeptin concentration was 7 (3-15) pmol/L. Copeptin was associated with plasma osmolarity (R=0.53, p<0.001), but not with 24h urinary volume, 24h urinary osmolarity or fractional urea excretion (p=0.7, p=0.9, p=0.3, resp.). Copeptin was associated with the various markers of disease severity in ADPKD (with TRV R=0.45, UAE R=0.39, GFR R=-0.58 and ERBF, R=-0.52 all p<0.001, figure). These associations were independent of age, gender and use of diuretics.

In conclusion, plasma osmolarity is associated with copeptin levels in ADPKD, but copeptin is not associated with its normal physiologic effects (24h urinary volume, -osmolarity and fractional urea excretion). Most importantly, in this cross-sectional analysis, copeptin levels are associated with severity of ADPKD. Together with prior experimental studies showing renoprotective properties of VP antagonism in ADPKD, these data support a possible pathogenetic role for VP in ADPKD.



Disclosure of Financial Relationships: nothing to disclose

F-PO1817

Copeptin, a Surrogate Marker for Vasopressin, Is Associated with Renal Function Decline in Patients with ADPKD Wendy E. Boertien,[1] Esther Meijer,[1] Ton J. Rabelink,[2] Joachim Struck,[3] Stephan J. L. Bakker,[1] Dorien J. M. Peters,[2] Paul E. de Jong,[1] Ron T. Gansevoort.[1] *[1]Nephrology, Groningen, Netherlands; [2]Nephrology, Leiden, Netherlands; [3]BRAHMS, Germany.*

Experimental studies suggest a detrimental role for vasopressin in Autosomal Dominant Polycystic Kidney Disease (ADPKD). It is, however, unknown whether endogenous vasopressin concentration is associated with renal function decline in patients with ADPKD.

We measured plasma copeptin (a marker of endogenous vasopressin) by immunoassay in 79 ADPKD patients who participated in a study on renal disease progression during 1994-1999 (1). During this study, GFR was assessed by inulin clearance. Plasma creatinine was measured to determine eGFR (MDRD). After completion of the study, patients were followed and the last available plasma creatinine value was obtained. If applicable, start date of renal replacement therapy (RRT) was reported.

In these patients (57% female, age 36.8 ±10.1 y, GFR 106.6 ±25.9 mL/min) median copeptin level was 2.7 (IQR 1.6 – 5.5) pmol/L. Copeptin was associated with change in GFR (inulin) during the study (median follow-up 3.3 (3.1 - 3.5) y, R=-0.3, p<0.01) and with change in eGFR (MDRD) during follow-up (median 11.4 (4.5 - 14.3) y, R=-0.3, p<0.01). On average, patients with a copeptin level of 10 pmol/L had a fall in eGFR of 4.4 ml/min/1.73m^2/yr compared to no loss of eGFR in patients with a copeptin level of 1 pmol/L. These associations were independent of age, gender and baseline (e)GFR. Nine patients started with RRT during follow-up. A twofold higher copeptin was associated with a hazard ratio for start of RRT of 2.0 (95%CI 1.2-3.4, p=0.01).

These data show that in ADPKD patients a higher vasopressin concentration is associated with renal function decline, suggesting that in these patients blockade of the vasopressin receptor may have a renoprotective effect.

(1) van Dijk, et al: No effect of enalapril on disease progression in ADPKD. NDT 2003;18:2314-20

Disclosure of Financial Relationships: nothing to disclose

F-PO1818

Renal Blood Flow (RBF) Is an Underestimated Tool To Monitor the Progression of Autosomal Dominant Polycystic Kidney Disease (ADPKD) Vicente E. Torres,[1] Arlene B. Chapman,[2] Bernard F. King,[1] Diego R. Martin,[2] Jared J. Grantham,[3] Michal Mrug,[4] Kyong Tae Bae,[5] William M. Bennett,[6] Marva M. Moxey-Mims,[7] Li Jie,[5] James E. Bost,[5] CRISP Consortium.[1-7] *[1]Mayo, Rochester, MN; [2]Emory U, Atlanta, GA; [3]Kansas U, Kansas City, KS; [4]U of Alabama, Birmingham, AL; [5]U of Pittsburgh, Pittsburgh, PA; [6]Legacy Good Samaritan, Portland, OR; [7]NIDDK, Bethesda, MD.*

Polycystic kidneys exhibit media thickening, increased wall-to-lumen ratio, vascular rarefaction and global glomerulosclerosis suggesting ischemia, possibly due to cyst compression, *PKD1* or *PKD2* mutation linked vascular abnormalities, or both. Ischemic damage has been proposed as the final common pathway to ESRD in CKD. Implementation/ evaluation of treatments aimed at protecting RBF and preventing hypoxia is hampered by lack of non-invasive methods to monitor RBF in diseased kidneys. Technological innovations allow high-resolution breath-held RBF imaging with improved signal-to-noise ratio and cardiac cycle synchronization. Strict image acquisition and analysis standardization are essential. CRISP seeks to determine whether RBF reduction predicts ADPKD progression. RBF decreased more rapidly than GFR: % changes (*p<0.05) from baseline were -4.0*, -10.9*, -8.5*, -33.9*, and -32.6* vs +0.5, +2.0, -3.4*, -18.1*, and -22.0%* at 1 (n 118), 2 (n 106), 3 (107), 6 (n 99) and 8 (n 38) years, respectively. RBF significantly added to the predictive value of total kidney volume (TKV) on rate of GFR decline when controlling for baseline GFR (Table). Higher TKV and lower RBF correlated with GFR decline; higher GFR at baseline associated with steeper GFR slopes during BL-YR3 due to regression to the mean.

Covariates	GFR slope (R²)	
	BL-YR3	BL-YR8
lnTKV0	0.15*	0.22*
GFR0	0.07*	0.03
Mean RBF	0.06*	0.08*
lnTKV0, GFR0	0.33*	0.34*
lnTKV, Mean RBF	0.16*	0.23*
lnTKV, GFR0, Mean RBF	0.45*	0.43*

*significant predictor in the model

Reduction in RBF precedes GFR decline. RBF adds to the predictive value of TKV on rate of GFR decline. Properly standardized measurement of RBF is an underestimated tool to monitor ADPKD and CKD progression.

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Novartis,.

F-PO1819

Diagnostic Accuracy of Positron-Emission Computed Tomography in the Diagnosis of Kidney and Liver Cyst Infection in Patients with Autosomal Dominant Polycystic Kidney Disease Francois Jouret,[1] Renaud Lhommel,[2] Claire Beguin,[3] Olivier Devuyst,[1] Yves A. Pirson,[1] Ziad Hassoun,[4] Nada Kanaan.[1] *[1]Nephrology, Université Catholique de Louvain, Brussels, Belgium; [2]Nuclear Medicine, Université Catholique de Louvain, Brussels, Belgium; [3]Medical Informatics and Statistics, Université Catholique de Louvain, Brussels, Belgium; [4]Gastro-enterology, Université Catholique de Louvain, Brussels, Belgium.*

Cyst infection (CI) remains a challenging issue in patients with autosomal dominant polycystic kidney disease (ADPKD). In most cases, conventional imaging techniques remain inconclusive. Recent observations have suggested that ^{18}fluorodeoxyglucose (^{18}FDG) positron-emission computed tomography (PET-CT) might help detect kidney and liver CI in ADPKD patients. Here, the systematic assessment of databases from 01/2005 to 12/2009 identified 27 PET-CT performed in 24 patients for suspicion of CI. These episodes were further categorized upon the following 4 criteria: temperature >38°C for >3 days, loin or liver tenderness, C-reactive protein plasma level >5 mg/dl, and microbiological documentation. Thirteen infectious events in 11 patients met all criteria for kidney (n=3) or liver (n=10) CI (group A), whereas 14 episodes in 13 patients only encountered 2 to 3 of them (group B). In group A, PET-CT proved CI in 11 cases (84.6%), while CT was contributive in one case. Still, PET-CT overlooked one liver CI in a 74-year-old renal transplant recipient (RTR) and one kidney CI in a 62-year-old patient with stage IV chronic kidney disease. In group B, PET-CT identified the source of abdominal infection in 9 cases (64.3%). Among these, two kidney CI were found in an 81-year-old patient under chronic haemodialysis and a 58-year-old RTR. Conversely, PET-CT showed no abnormal ^{18}FDG uptake in 5 cases, including 2 renal intracystic bleedings. The median delay between the onset of symptoms and PET-CT procedure was 9 days. The sensitivity and specificity of PET-CT imaging in CI diagnosis reach 86.7% and 100%, respectively. In conclusion, PET-CT nowadays represents the optimal tool to (i) confirm and locate cyst infection, and (ii) identify alternative sources of abdominal infection in ADPKD patients.

Disclosure of Financial Relationships: nothing to disclose