DAY TO DAY PROTEINURIA VARIABILITY IN PRIMARY AND SECONDARY GLOMERULOPATHIES

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Background

Substantial day-to-day variability in spot urine protein to creatinine ratio (PCR) exists in patients with stable chronic kidney disease (CKD) [1,2]. The presence and factors associated with daily variability in 24 hours urinary protein losses (UPV) in patients with recently diagnosed glomoerulopathies are largely unknown.

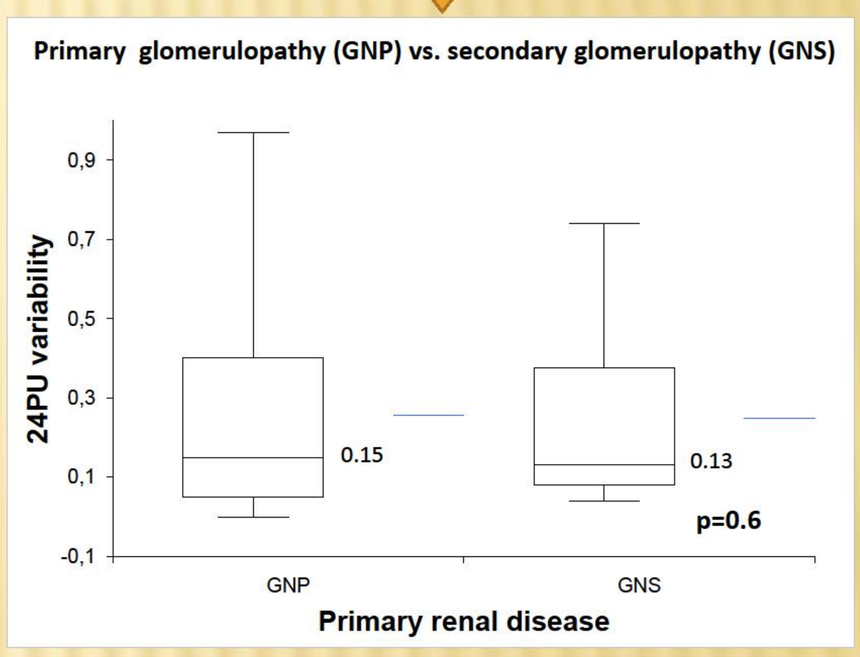
Methods

- **Prospective cross-sectional, single center study on 36 consecutive patients with primary and secondary glomerulopathies.**
- Protein and creatinine were determined from 24h urine specimens in two successive days.
- The adequacy of the 24-h collection was assessed by comparing the total creatinine in the sample to the predicted creatinine [22-(age/9) mg/kg/day in women and 28-(age/6) mg/kg/day in men]. Collections were considered accurate if measured/expected ratios were between 0.8 and 1.2.
- **Urinary protein variability (UPV) was assessed using the coefficient of variation defined as the ratio of the standard deviation to the mean of UPV measurements.**
- **Corelations**. Bivariate correlations using Pearson and Spearman tests were done.
- Binomial logistic regression was used to investigate the factors associated with UPV. For the regression analysis, variables were log transformed to satisfy assumptions of normality.

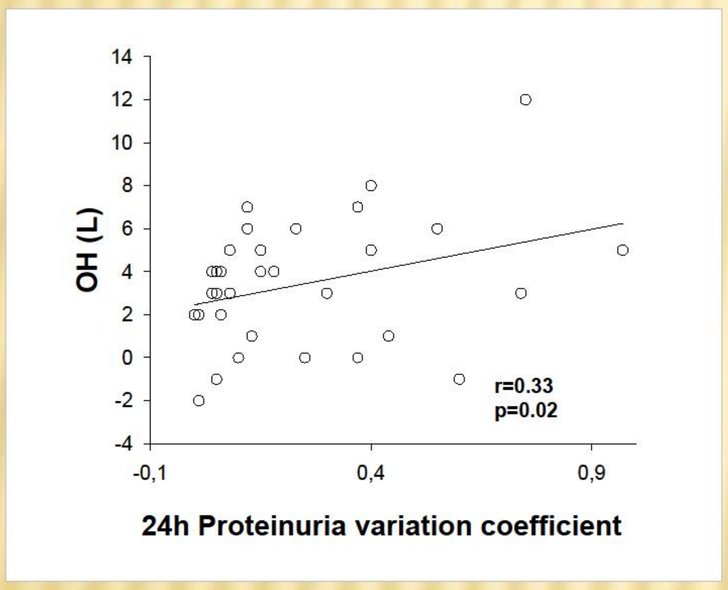
Results

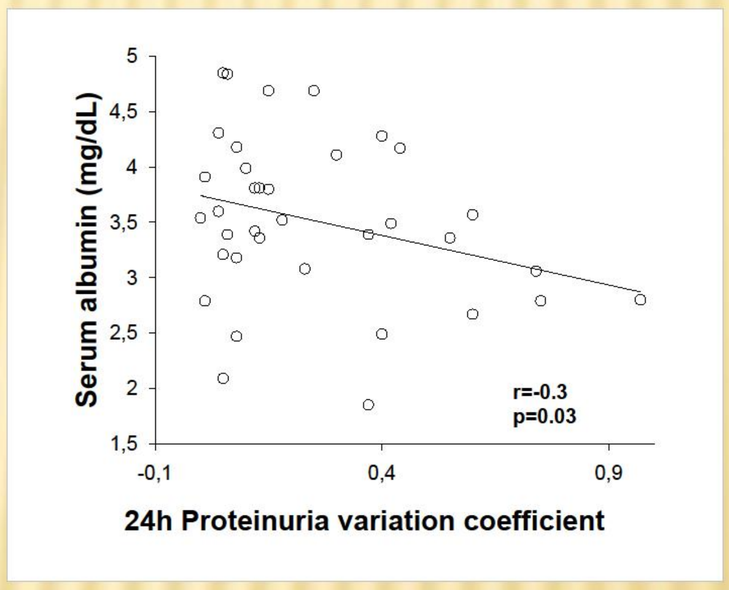
	All	High UPV	Low UPV	p
Number	36	18	18	
Age (years)	60 [57-66]	62.5 [56-69]	60 [55-67]	1.0
Male gender (%)	64	61	67	0.7
BMI (kg/m²)	28.1 [24.2-32.4]	29.8 [26.1-32.8]	26.2 [23.6-34.7]	0.4
OH (L)	3 [2-5]	3 [2-4]	4 [1-5]	0.7
Primary GN (%)	50	56	44	0.5
MAP (mmHg)	100.0 [96.7-103.3]	101.6 [100.0-103.3]	96.6 [90.0-110.0]	1.0
Hb (g/dL)	9.9 [9.2-11.6]	9.8 [8.8-11.9]	10.2 [8.6-12.2]	0.7
CRP (mg/L)	6.5 [4-10]	5.5 [1-10]	7.5 [3-15]	0.7
Serum albumin (g/dL)	3.5 [3.2-3.8]	3.40 [3.18-4.11]	3.54 [2.79-3.99]	0.7
Cholesterol (mg/dL)	222.5 [174-270]	207 [170-292]	236 [170-274]	0.7
Triglycerides (mg/dL)	193 [155-235]	178 [140-249]	219 [136-244]	0.7
Uric acid (mg/dL)	6.9 [6.0-7.5]	7.4 [6.0-8.2]	6.3 [5.1-7.5]	0.09
eGFR (mL/min)	22.5 [16.0-38.0]	19 [11-48]	32.5 [16-54]	0.09
CAVI	11 [10-12]	11 [10-14]	11 [10-14]	0.8
ABI	0.98 [0.90-1.10]	0.98 [0.90-1.11]	0.97 [0.91-1.13]	1.0

Primary glomerulopathise: 50% membranous nephropathy, 25% immunoglobulin A nephropathy, 25% minimal change disease
Secondary glomerulopathies: 30% diabetic, 25% lupus, 45% other

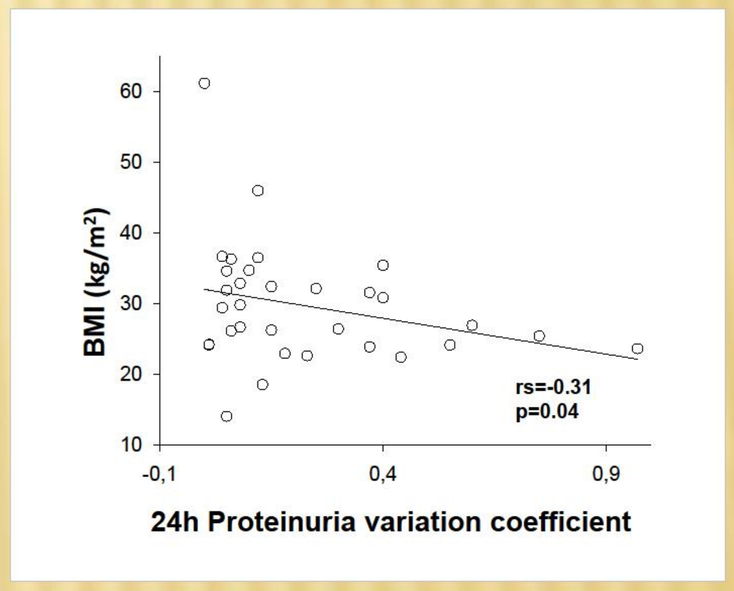


Pearson





Spearman



Binomial logistic regression model: UPV as dependent variable (high versus low)

	B	OR (95%CI)	p
Ln(eGFR)	-1.33	0.26 (0.08-0.87)	0.02
Ln(BMI)	-3.8	0.02 (0.00-0.99)	0.04
Constant	16.8	1.97	0.02
Variables entered on step 1: gender, BMI, OH, eGFR, ABI Cox and Snell R^2= 0.24; p=0.01)			

Conclusion

- With the reserve of small cohort, single center, and cross-sectional design, our study shows that proteinuria measurements varies form one day to another, a fact which may have important implications in diagnosis, risk stratification and in clinical research.
- Higher UPV seems to be related to lower eGFR in newly diagnosed glomerulopathies.
- Larger studies are needed to investigate the impact of day to day proteinuria variability on the renal outcome.

References

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