ACCURACY OF URINARY SPOT PROTEIN TO CREATININE RATIO IN PRE-POST TREATMENT OF NEPHRITIS

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OBJECTIVES

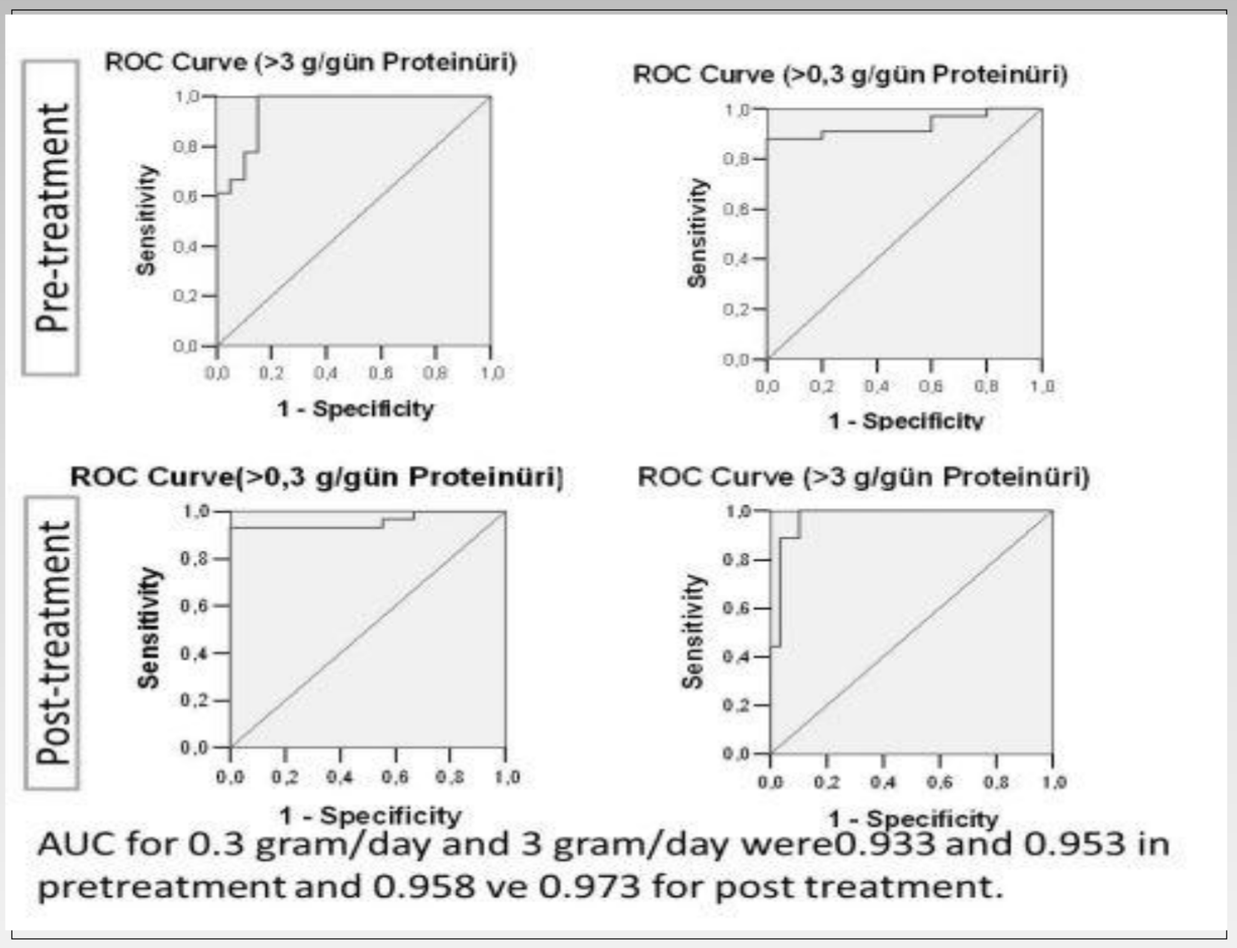
Quantifying protein in urine is commonly used in the diagnosis of kidney diseases, measuring the efficiency of the treatment and evaluation of prognosis. there are sufficient data in the literature to demonstrate a strong correlation between the protein:creatinine ratio in a random urine sample and 24-h protein excretion. However most of these studieas are cross-sectional (1-3). We aimed to perform a prospective evaluation of accuracy of urinary spot Protein/Creatinine ratio in pre-post treatment in patients with various glomerulonephritis.

METHODS

The correlation between P/C in random urine specimens and urinary protein excretion in 24-h collections in pre- and post-treatment periods were evaluated in 38 adults (17 male and 21'i female). The primary diagnosis were Membranous nephritis (n=10), lupus nephritis (n=7), and FSGS (n=5). Samples was obtained before treatment and remission period or in 6-12 months in those not under remission. Diagnostic accuracy of the P/C ratio was evaluated by receiver-operator curves (ROC) to predict different threshold levels of protein excretion (0.3 and 3 gram/day).

RESULTS

A linear relationship exists between spot P/Cr and 24 h protein excretion, with a significant correlation in both pre and post treatment values ($p<0.0001$).The deviation between the methods increased parallel to the amount of proteinuria and was also higher in patients with low creatinine output. [Figure 1] The areas under curve by ROC curve analysis performed to detect pre and post treatment urine protein excretion of 0.3 and 3 g in 24-h collections were >0.95.[figure1]



	Pre	Post	P
24 hour Proteinuria (g/day)	3.4 3.2	2.2 3.2	0.005
SpotP/Cr (mg/mg)	2.8 2.7	1.9 2.5	0.034
Serum Cr (mg/dl)	0.95 0.43	0.98 0.47	ns
Serum Albumin (g/dl)	2.8 1.2	3.4 1.0	0.001
Cr-Clearance (ml/min)	86 35	89 35	ns
Deviation (g/day)	-0.59 1.6	-0.29 1.5	ns

CONCLUSIONS

The P/C in spot urine samples could be used as an alternative to urine protein excretion in 24-h collections. But it is unreliable in patients with high protein excretion. Accuracy of the method needs to be clarified in patient with low creatinine production.

REFERENCES:

[1] Schwab SJ, Christensen RL, Dougherty K, Klahr S. Quantitation of proteinuria by the use of protein-to-creatinine ratios in single urine samples. Arch Intern Med 1987;147:943-944
[2] Ginsberg JM, Chang BS, Matarese RA, Garella S. Use of single voided urine samples to estimate quantitative proteinuria. N Engl J Med 1983;309:1543-1546
[3] Rodby RA, Rohde RD, Sharon Z, Pohl MA, Bain RP, Lewis EJ. The urine protein to creatinine ratio as a predictor of 24-hour urine protein excretion in type 1 diabetic patients with nephropathy. The Collaborative Study Group. Am J Kidney Dis 1995;26:904-909

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