Abstract

Diabetes mellitus (DM) is a leading cause of chronic kidney disease (CKD) and a major source of morbidity and mortality in patients with established CKD.

The aim was to analyze the efficiency of various methods of examination to update the degree of diabetic nephropathy and to determine the optimal method to predict the decline in renal function in patients with DM.

Methods

GFR was estimated using Cockcroft-Gault and MDRD formulas. Urinary protein excretion in the morning and daily urine samples, urine albumin/creatinine ratio (ACR), endogenous creatinine clearance, serum creatinine levels were measured. Nonparametric statistical methods were used.

Results

✓ Reliable differences were revealed in protein excretion in the morning urine sample (p=0.047)
✓ No differences have been received between the level of urinary albumin excretion and ACR (p=0.227; p=0.331 resp.)
✓ No significant differences in the urinary protein excretion in the daily sample have been identified (p=0.258)
✓ Reliable differences in GFR were found using endogenous creatinine clearance measurement (p=0.0001)

Urinary protein excretion in the morning sample correlates with GFR (r=0.393; p<0.05), serum creatinine level (r=0.470; p<0.05), eGFR (r=-0.398)

At the same time urinary daily protein excretion correlates only with serum creatinine level (r=0.527; p<0.05)
ACR correlates with the age at DM 1 onset (r=-0.334; p<0.05)

Conclusion

Urinary protein excretion in the morning sample which is rather cheap, simple and convenient for patients in compare with such reliable and accurate methods as the evaluation of daily urinary protein excretion, ACR and endogenous creatinine clearance can be an efficient method of predicting decline in renal function in patients with DM 1 at CKD stages 1-3.