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Role of Cystatin C in Progression of Diabetic Kidney Disease

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Objectives : It has been known that cystatin C is a marker for early prediction of renal function. The aim of our study was to investigate the role of cystatin C in the development and progression of diabetic kidney disease (DKD).
Methods : A total of 499 patients with DT1 and DT2, aged 34 to 84 years (60 [60;72]), were examined. Control group included 65 patients without diabetes. All patients underwent standard clinical and laboratory examination. Renal function was assessed based on the levels of serum creatinine and cystatin C.
Results : In patients with diabetes mellitus (DM), regardless of type, an increase in cystatin C was noted compared to patients in the control group: 1.01 mg/L versus 0.72 mg/L ($p<0.001$) and 0.78 mg/L versus 0.72 mg/L ($p<0.001$), respectively. For predicting the decline in eGFR in patients with diabetes mellitus (DM), cystatin C and creatinine had similar diagnostic significance (AUC=0.957, 95% CI 0.935; 0.978 and AUC=0.987, 95% CI 0.979; 0.995). At the borderline eGFR level of 90 ml/min/1.73 m², the AUC ROC values were 0.905 for cystatin C and 0.707 for creatinine. It is likely that cystatin C is a more sensitive marker than creatinine for detecting early nephropathy in diabetes. At a cystatin C level of ≥0.83 mg/L, the sensitivity was 81.34% and specificity was 80.38%. In patients with TD2, a cystatin C level of ≥0.83 mg/L predicted a decline in eGFR<90 ml/min/1.73 m² with a sensitivity of 82.73% and specificity of 77.63% (AUC=0.888). This association was absent in DT1 patients.
Conclusions : This study highlights the significant elevations of cystatin C levels in patients with DM compared to controls, indicating its potential as a sensitive biomarker for early detection of DKD and decline in eGFR, particularly in DT2.