Diagnostic Accuracy of Serum Cystatin C for Early Recognition of Nephropathy in Type 2 Diabetes Mellitus

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Abstract

Objectives: : Diabetic nephropathy is one of the major complications that develop over time in type 2 diabetes mellitus (T2DM). This prospective study was conducted to assess the diagnostic accuracy of serum cystatin C in detecting diabetic nephropathy at earlier stages.

Materials and Methods: This study was undertaken on 50 cases of T2DM and 50 healthy subjects as controls. Demographic and anthropometric data and blood and urine samples were collected. The concentration of serum cystatin C (index test) and traditional markers of diabetic nephropathy, serum creatinine, and urinary microalbumin (the reference standard) were estimated. Similarly, blood glucose, glycated haemoglobin (HbA1c), triglycerides, total cholesterol, high-density lipoprotein (HDL) cholesterol, and urinary creatine were measured.

Results: The mean ± SD serum cystatin C was significantly higher in T2DM as compared to control (1.07 ± 0.38 and 0.86 ± 0.12 mg/dl, respectively,). The mean ± SD bodyweight, BMI, W : H ratio, pulse, SBP, and DBP were 66.4 ± 12.6 kg, 26.2 ± 5.6 kg/m2, 1.03 ± 0.09, 78 ± 7, 125 ± 16 mm of Hg, and 77 ± 9 mm of Hg, respectively, in cases. A significant difference in HDL cholesterol and serum cystatin C was observed among different grades of nephropathy. Cystatin C had a significant positive correlation with age (r = 0.323,), duration of T2DM (r = 0.326,), and UACR (r = 0.528,) and a significant negative correlation with eGFR CKD-EPI cystatin C (r = −0.925,). The area under ROC curve for serum cystatin C (0.611, 95% CI: 0.450–0.772) was greater than for serum creatinine (0.429, 95% CI: 0.265–0.593) though nonsignificant.

Conclusion: Serum cystatin C concentration increases with the progression of nephropathy and duration of diabetes in Nepalese T2DM patients suggesting cystatin C as a potential marker of renal impairment in T2DM patients.

Biography

Madhab Lamsal has working from Department of Biochemistry, B P Koirala Institute of Health Sciences, Ghopa, and Dharan, Nepal