SERUM CHROMOGRANIN A AS EARLY BIOMARKER FOR DIAGNOSIS OF DIABETIC KIDNEY DISEASE IN TYPE 2 DIABETES MELLITUS

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Introduction

Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. Poorly controlled diabetes lead to serious complications, including retinopathy; nephropathy; peripheral neuropathy, atherosclerotic cardiovascular, peripheral arterial and cerebrovascular disease.

Diabetic kidney disease (DKD) is one of the most prominent complications of diabetes and is the leading cause of end-stage renal disease, requiring costly renal replacement therapy(dialysis or transplantation).

DKD is a clinical syndrome characterized by: persistent albuminuria (albumin to creatine ratio [ACR] >30 mg/g) and/ or progressive reduction in the glomerular filtration rate (eGFR< 60 mL/min/1.73 m2)

Chromogranin A (CgA) is the main member of the chromogranin glycoprotein family and is an acidic hydrophilic glycoprotein. The kidney is the main organ for the removal of CgA, and it is elevated in serum with declining renal function. In patients with renal failure, serum CgA increases higher than creatinine and other biomarkers.

Aim of the work

The aim of study was to estimate serum CgA levels and to evaluate the role of serum CgA in the early diagnosis of diabetic kidney disease (DKD).

Subjects and Methods

This study included 90 diabetic patients. All patients were subdivided into Group A (45 Diabetic patients with uACR<30) and Group B (45 Diabetic patients with uACR>30).

All the subjects were subjected to full history taking and clinical examination including general examination and fundus examination. Laboratory investigations including fasting blood glucose, HbA1C, Albumin to creatinine ratio, S. creatinine, eGFR and s.chromogranin A (CgA) ELISA Kit (96T) were measured.

Results

Table 1: Comparison between the two studied groups according to S.chromogranin A.

S.chromogranin A	Group A (n = 45)	Group B (n = 45)	U	p
S.chromogranin A			546.5*	0.001*
Min. – Max.	0.22 – 1.13	0.38 – 1.96		
Mean ± SD.	0.48 ± 0.15	0.73 ± 0.40		
Median (IQR)	0.45 (0.21)	0.55 (0.36)		
95% CI (lower-upper)	0.44 – 0.59	0.56 – 0.78		

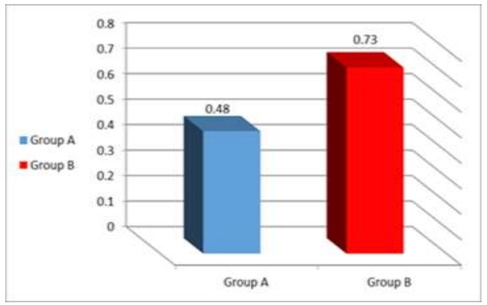

Figure 1: Comparison between the two studied groups according to S.chromo granin A

Table 2: Validity (AUC, sensitivity, specificity) for Serum CgA to discriminate diabetic patients with diabetic kidney disease from diabetic patients without diabetic kidney disease (Group A vs group B)

	AUC	P	95% C.I	Cut off	Sensitivity	Specificity	PPV	NPV
Serum CgA	0.714*	0.001*	0.53–0.78	>623.500	68.29	60.0	63.6	64.9

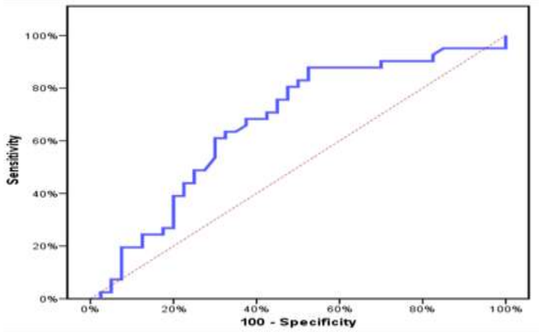

Figure 2: ROC curve for Serum CgA to discriminate diabetic patients with diabetic kidney disease from diabetic patients without diabetic kidney disease (Group A vs group B).

Conclusion

DKD is one of the most prominent complications of diabetes and is the most leading cause of end-stage renal disease (ESRD). High serum level of chromogranin A is a sensitive predictor for development of diabetic kidney disease. There is a significant correlation between glycemic control (HbA1c) and development of DKD.