VALUE OF URINARY PODOCIN LEVEL AS A MARKER OF DIABETIC KIDNEY DISEASE

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Objectives:

Diabetic kidney disease (DKD) is one of the most dangerous microvascular complications associated with high morbidity and mortality. Podocyturia seems to be a non-invasive marker of subclinical early renal disease. We aimed to study the Urinary Podocin level as an early marker of the glomerular lesion in patients with type II diabetes mellitus (DM) and its association with severity of the disease.

Methods:

This case control study conducted over 45 patients with type II diabetes mellitus with GFR (>60 ml/min/1.73m2) collected from Ain Shams University Hospital, Cairo, Egypt. They were divided into Three groups , Group I : (15) patients with Normoalbuminuria urinary albumin/creatinine ratio "ACR"(<30mg/gm), Group II: (15) patients with microalbuminuria ACR (30-300mg/gm) and Group III : (15) patients with macroalbuminuria ACR (>300 mg/gm),In addition to 10 healthy volunteers matched in age and sex as a control group. Fever, urinary tract infection, uncontrolled hypertension, Congestive heart failure or Malignancy were excluded. Full history and clinical examination, laboratories were done included (fasting blood glucose (FBG), HbA1c ,blood urea nitrogen (BUN), creatinine, albumin, serum lipids profile tests, urine analysis and ACR in urine). GFR was calculated by The CKD-EPI equation Urinary Podocin quantification by enzyme-linked immuno-sorbent assay (ELISA) using kit supplied by SunLong Biotech Co., LTD (GongShu District, Hangzhou, Zhejiang, China, Catalogue Number: SL1430Hu).

Results:

45 patients with mean age 49.8 ± 7.28 year , ranging from 36-65 year, 51.1% were females, mean duration of DM 58.63 ± 26.79 month , GFR 89.59 ± 13.66 (ml/min/1.73m2) and about 51.1% of patients on insulin treatment while 48.9% of patients oral hypoglycemic drugs . Urinary Podocin levels (ng/ml) Mean ± SD were (10.77 ± 5.30,18.27 ± 6.83,42.50 ± 9.04,3.50 ± 1.66)(P<0.001) in patients groups I,II,III versus control respectively. Podocin level was significantly positively correlated with duration of DM months (r= 0.655, P<0.001), Body mass index (kg/m2)(r = 0.420, P=0.004) , Diastolic BP (r = 0.300,P=0.045), BUN (r =0.459,P=0.002), Creatinine (r=0.442,P =0.002),FBG (r =0.624,P<0.001), HbA1c (r = 0.508, P<0.001), S.Cholesterol (r = 0.643, P<0.001),S. Triglycerides (r = 0.670,P<0.001), ACR (r = 0.874,P<0.001). Highly statistically negative correlation between Podocin level and GFR (r =-0.584,<0.001),S. albumin(r = -0.755, P<0.001), Hemoglobin (r =-0.538,P<0.001) Agreement for Urinary Podocin level (ng/ml) to predict diabetic nephropathy in Normoalbuminuria cases (vs control) is 93.33 % Sensitivity and specificity is 90%.,with with cut off value>5.3 ng/ml , a positive predictive value of 93.3 and negative predictive value of 90 (P<0.001) (Figure 1) .

Figure (1): ROC curve for Antipodocin Ab level (ng/ml) to predict diabetic nephropathy in NormoAlbuminuria cases (vs control).

	AUC	p
Podocin Ab level(ng/ml)	0.977*	<0.001*
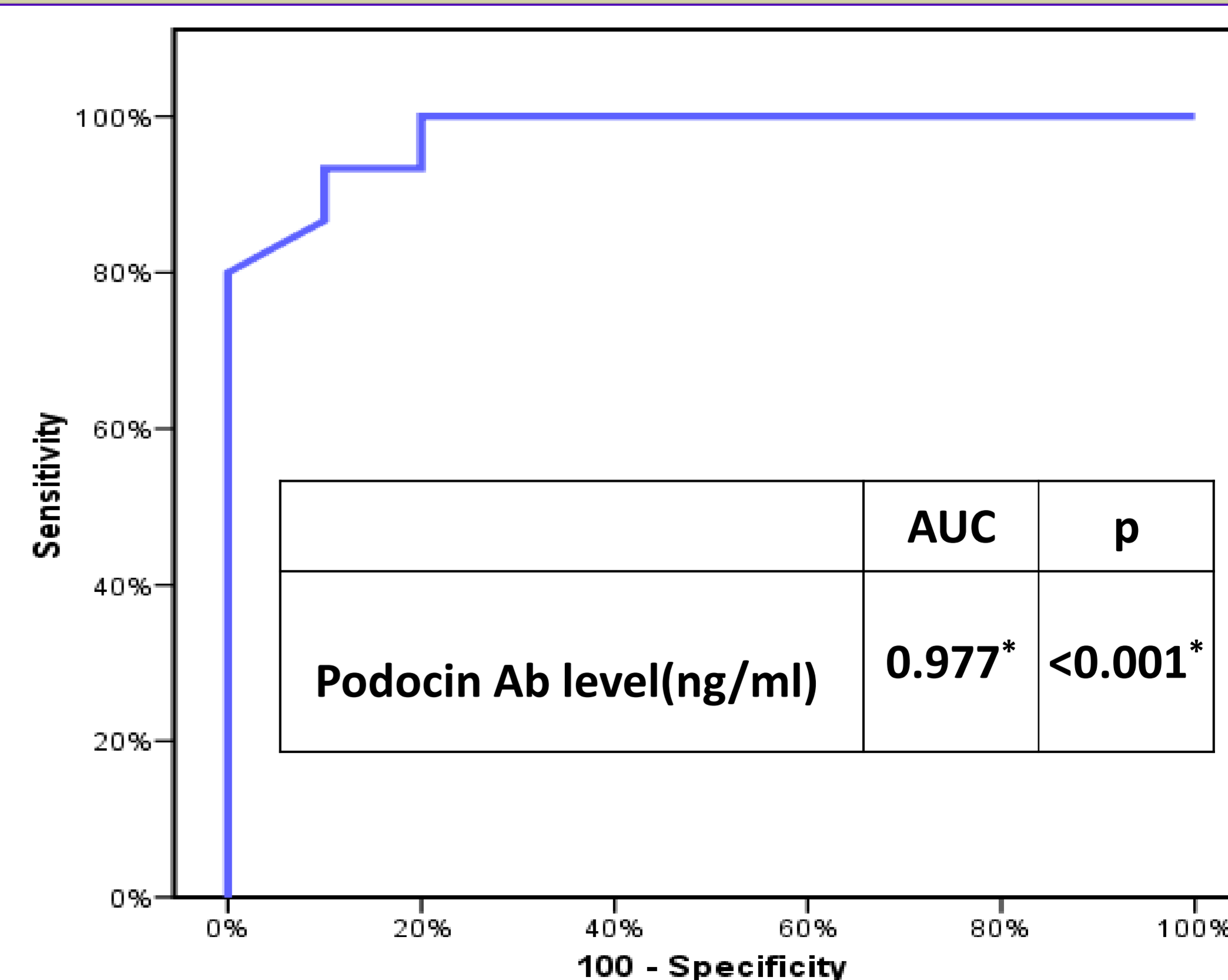
Conclusions:

Urinary Podocin is highly sensitive and specific marker to predict diabetic nephropathy and decrease GFR may be associated with severity of glomerular disease in type II diabetic patients..

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