

## Urinary Proteomics for Diagnosis of Nephropathy and Subclinical Vascular Damage in Type 2 Diabetes.

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### Background.

We have previously described a urinary proteomic classifier (CKD273) for diagnosis and prediction of diabetic nephropathy (DN). Whether CKD273 only highlights renal damage or also reflects generalised vascular damage in patients with diabetes remains unclear.

### Methods.

We recruited 45 Type 2 diabetic patients: 15 normoalbuminuric; 15 with MA and 15 with DN: albumin:creatinine ratio 1.1 (0-3.3), 7.7 (2.6-22.5), 124.5 (0.8-412.6) mg/mmol; estimated glomerular filtration rate (eGFR); 74 (46-125), 69 (49-100), 37 (6-60) ml/min/1.73m<sup>2</sup>. Participants underwent pulse wave analysis assessment of heart-rate corrected augmentation index (Alx@75) and ultrasound measurement of carotid intima-media thickness (c-IMT). Urine samples were analysed using capillary electrophoresis coupled to mass spectrometry (CE-MS).

### Results.

There was no difference in age (61±8, 64±6 and 59±7 years; p=0.130), body mass index (34.4±6.2, 35.1±8.1, 34.4±6.7 kg/m<sup>2</sup>; p=0.955) or blood pressure (144±15/83±7, 149±20/83±10, 148±16/82±12 mmHg; p=0.765/0.910) between groups. Participants were at high CV risk (Framingham score: 30±11, 38±12, 32±12; p=0.141; ASSIGN score: 36±15, 43±15, 39±17; p=0.415) and had subclinical vascular damage (Alx@75: 22 (7-38), 23 (13-21), 25 (4-35)%; p=0.993; c-IMT: 0.723 (0.563-1.276), 0.760 (0.614-1.082), 0.704 (0.581-0.986)mm; p=0.305) independent of eGFR (r=0.259, p=0.086 for c-IMT; r=0.082 p=0.598 for Alx@75). Despite similar CV risk and vascular phenotypes the CKD273 classifier was significantly different between the groups (-0.169±0.373, 0.421±0.467, 0.765±0.434; p=0.002) but not related to c-IMT (r=0.075, p=0.747) or Alx@75 (r=-0.299, p=0.200).

### Conclusions.

CKD273 distinguished normoalbuminuria from MA and DN independent of vascular phenotype. Neither traditional renal markers nor a novel proteomic classifier appear to fully explain the vascular damage in our cohort.