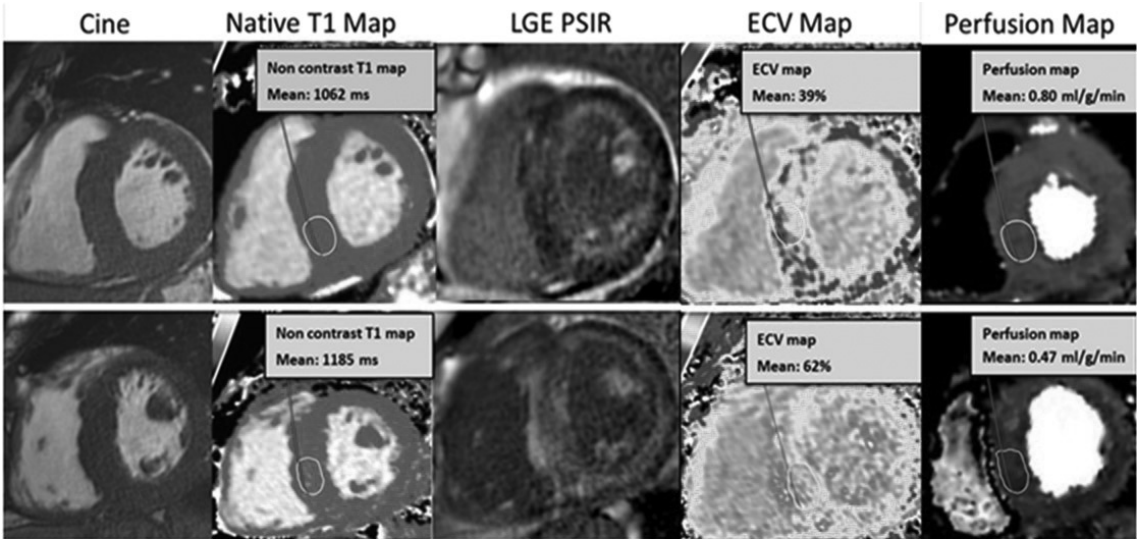

Abstract 028 Figure 1 Short axis cine SSFP images in end-diastole, corresponding native T1 mapping, late gadolinium enhancement (LGE) images, ECV mapping and myocardial blood flow mapping in two patients with cardiac amyloidosis, the same mass, but different LGE patterns. Top: subendocardial LGE, high ECV values and borderline myocardial rest perfusion values. Bottom: transmural LGE, very high ECV values and reduced myocardial rest perfusion values.

029 DIABETES, MICROALBUMINURIA AND SUBCLINICAL CARDIAC DISEASE: IDENTIFICATION AND MONITORING OF INDIVIDUALS AT RISK OF HEART FAILURE

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Background Patients with type 2 diabetes and elevated urinary albumin:creatinine ratio (ACR) have increased risk of heart failure. We hypothesised this was due to cardiac tissue changes rather than silent coronary artery disease.

Methods and results In a case-controlled observational study 130 subjects including 50 ACR+ve diabetes patients with persistent microalbuminuria (ACR >2.5 mg/mol in males and >3.5 mg/mol in females, ≥2 measurements, no previous renin angiotensin aldosterone (RAAS) therapy), 50 ACR-ve diabetes patients and 30 controls underwent cardiovascular magnetic resonance for investigation of myocardial fibrosis, ischaemia and infarction and echocardiography. 30 ACR+ve patients underwent further testing after 1 year treatment with RAAS blockade with ace inhibitor or angiotensin receptor blocker.

Cardiac extracellular volume fraction (ECV), a measure of diffuse fibrosis, was higher in diabetes patients than controls (26.1±3.4 and 23.3%±3.0% p=0.0002) and in ACR+ve than ACR-ve diabetes patients (27.2±4.1 vs 25.1%±2.9%, p=0.004). ACR +ve patients also had lower E' measured by echocardiography (8.2±1.9 vs. 8.9±1.9 cm/s, p=0.04) and elevated high-sensitivity cardiac troponin T (hs-cTnT) 18 vs 4%≥14 ng/L (p=0.05). Patients with elevated hs-cTnT had significantly elevated native T1 and ECV (1293.3±80.2 and 1235.8±46.5 ms, p=0.0001 and 30.3±4.8 vs. 25.6%±3.2%, p<0.0001 respectively). Rate of silent myocardial ischaemia or infarction were not influenced by ACR status.

Treatment with RAAS inhibition was associated with a significant decrease in serum aldosterone level (337.0±192.7 to 244.3±137 pmol/L, p=0.03) but no significant change in 24 hour blood pressure. RAAS blockade was associated with increased left ventricular ejection fraction (59.3±7.8 to 61.5% ±8.7%, p=0.03) and decreased ECV (26.5±3.6 to 25.2±3.1, p=0.01) but no changes in diastolic function or hs-cTnT levels.

Conclusions Asymptomatic patients with type 2 diabetes and persistent microalbuminuria have several markers suggestive of diffuse cardiac fibrosis including elevated ECV, hs-cTnT and diastolic dysfunction. The prevalence of silent myocardial ischaemia or infarction was not influenced by ACR status. Treatment with an ACE inhibitor was associated with improvement in LV EF and ECV regression. These findings suggest that increased risk in this patient group is mediated by subclinical changes in tissue structure and function rather than occult CAD, which may have implications for the management of these patients.