

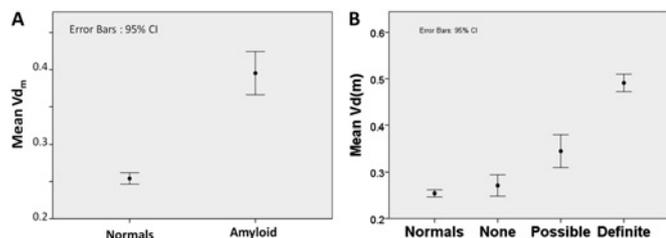
diseases. Further work will build on this study to evaluate the potential role of  $Vd_m$  as a clinical biomarker.

### 093 CARDIAC INVOLVEMENT IN CARDIAC AL AMYLOIDOSIS AS MEASURED BY EQUILIBRIUM CONTRAST CARDIOVASCULAR MAGNETIC RESONANCE

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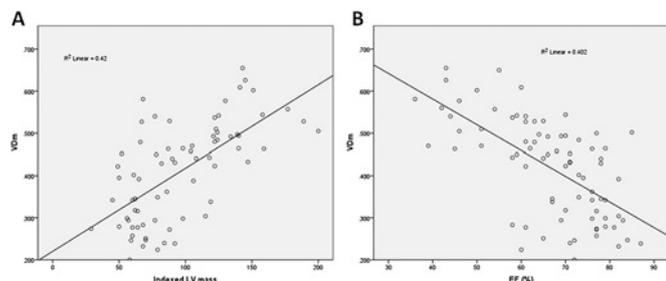
**Introduction** Cardiac involvement drives prognosis in Systemic AL Amyloidosis, predicting outcome and influencing therapeutic options. Current methods of cardiac assessment do not quantify the myocardial amyloid burden. We used Equilibrium Contrast Cardiovascular Magnetic Resonance (EQ-CMR) to measure the cardiac interstitial compartment, measured as the myocardial contrast volume of distribution,  $Vd_m$ , which we hypothesised would reflect the amyloid burden.



Abstract 093 Figure 1

**Methods** Patients with systemic AL amyloidosis undergoing routine work up at the National Amyloidosis Centre were recruited (n=60, 39 males, 21 females, mean age 63 years) and underwent conventional CMR including late enhancement, EQ-CMR to measure  $Vd_m$  and standard cardiac work-up including ECG, echocardiography, biomarkers (BNP, Troponin T) and functional assessment (6-min walk test, 6MWT, where permitted by autonomic neuropathy). Results were compared to normal controls. Conventional assessment ranked cardiac involvement as definite, probable and none.

**Results**  $Vd_m$  was significantly higher in patients than normal controls (0.25 vs 0.40,  $p<0.001$ ) (see Abstract 093 figure 1A). This tracked conventional cardiac assessment (none, probable, definite corresponded with a  $Vd_m$  of 0.276 vs 0.342 vs 0.488,  $p<0.005$ ), respectively (see Abstract 093 figure 1B).  $Vd_m$  correlated with cardiac parameters by echo (eg, TDI S-wave  $R^2$  0.27,  $p<0.001$ ) and



Abstract 093 Figure 2

conventional CMR (eg, indexed LV mass  $R^2$  0.31,  $p<0.001$ —see Abstract 093 figure 2). Significant correlations were also seen with BNP ( $R^2$  0.47,  $p<0.001$ ) and Troponin T ( $R^2$  0.28,  $p=0.006$ ).  $Vd_m$  was associated with ECG abnormalities and tracked small QRS voltages ( $R^2$  0.33,  $p<0.001$ ). A higher  $Vd_m$  correlated with a lower 6MWT outcome ( $R^2$  0.13,  $p=0.03$ ).

**Conclusions** The measurement of the myocardial interstitial compartment ( $Vd_m$ ) using EQ-CMR in systemic AL amyloidosis quantifies the cardiac amyloid burden.

### 094 THE PREVALENCE OF NON-CALCIFIED PLAQUES IN SYMPTOMATIC PATIENTS WITH ZERO CALCIUM SCORE

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**Introduction** Atheromatous plaque rupture is the most common cause of coronary artery thrombosis. Non-calcified plaques, with thin fibrous cap and large thrombogenic lipid core, are predominantly the most susceptible to rupture.

**Aims** To investigate, with a 640-slice, 320-row CT scanner, the non-calcified coronary artery plaques (NCAP) prevalence and the degree of caused obstruction, in a cohort of symptomatic subjects, without coronary calcification.

**Methods and Results** Out of 1806 patients, who underwent coronary CT angiography (CTCA), we retrospectively identified 447 symptomatic patients with coronary artery calcification (CAC) score of 0. Standard cardiovascular risk factors were assessed prior to the CTCA study. From the 447 subjects, 400 (89.48%) had a negative CTCA, while in 47 (10.51%) NCAP were depicted on CTCA. Four of these (4/47) had stenosis more than 50%. Mean age of patients with positive CTCA was 56.21 years, significantly higher than those of patients with negative CTCA (50.6 years,  $p<0.004$ ). Additionally, when compared to patients with normal CTCA, those with NCAP were in higher risk of developing CAD, as derived from the pre CTCA assessment (26% vs 34.04%,  $p<0.0001$ ). The Left Anterior Descending artery (LAD), and especially the proximal segment, was the predominant location for the development of NCAP.

**Conclusion** Absence of coronary calcification does not exclude the presence of atherosclerosis; NCAP is present in up to 10% of patients with CAC score of 0. Symptomatic patients, who older in age, with multiple factors and high probability of CAD, would benefit from CTCA even in the absence of CAC.

### 095 PLAQUE MAPPING BASED ON CONTRAST RATIOS PERMITS IDENTIFICATION OF UNSTABLE CORONARY PLAQUE AND QUANTIFICATION OF CORONARY ATHEROSCLEROSIS BY CORONARY CT ANGIOGRAPHY

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**Background** Previous attempts to characterise coronary components using CT have relied on fixed Hounsfield unit (HU) ranges which do not correct for the effect of inter-patient variation of contrast intensity on plaque attenuation. We examine the utility of using HU-ranges derived from contrast attenuation ratios.

**Methods** 57 patients underwent coronary CT and Virtual Histology IVUS examination. Attenuation was sampled in over 1000 plaque