

diastolic blood pressure:  $97 \pm 15$  mmHg). The prevalence of LAE by CMR was 26% and by ECG varied from 1% (P-mitrale) to 27% (P axis  $<30^\circ$ ), and was 46% when  $\geq 1$  ECG LAE criteria were present. There was no significant difference in mean LAVI when  $\geq 1$  ECG LAE criterion was present compared to when no ECG LAE criteria were present ( $47 \pm 15$  vs  $50 \pm 15$  ml/m<sup>2</sup>,  $p = 0.235$ ). All the individual ECG LAE criteria were more specific than sensitive (Table 1/A), with specificities ranging from 70% (P axis  $<30^\circ$ ) to 99% (P-mitrale). Obesity attenuated the specificity of most of the individual ECG LAE criteria (Table 1/B). Obesity correlated with significant lower specificity (48% vs 65%,  $p < 0.05$ ) and a trend towards lower sensitivity (59% vs 43%,  $p = 0.119$ ) when  $\geq 1$  ECG criteria of LAE were present.

**Conclusion** Individual ECG criteria of LAE in hypertension are specific, but not sensitive, for identifying anatomical LAE, relative to CMR. LAE in hypertension should not be excluded on the basis of the ECG, particularly in obese subjects.

### 9 GLOBAL LONGITUDINAL STRAIN USING FEATURE TRACKING IDENTIFIES THE PRESENCE OF CHRONIC MYOCARDIAL INFARCTION IN PATIENTS WITH NORMAL LV EJECTION FRACTION

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**Objectives** Chronic myocardial infarction (MI) detected by late gadolinium enhancement (LGE) is associated with significant mortality and morbidity. Limited subendocardial infarction may not lead to reduction in ejection fraction (EF) and a regional wall motion abnormality (RWMA) may not be evident. Global longitudinal strain (GLS) is impaired independently of EF in a number of conditions, enabling early detection of disease. Strain imaging predicts final infarct size in MI and is superior to LVEF in predicting morbidity and mortality. We hypothesised subjects with chronic MI but normal EF would have impaired GLS compared to healthy volunteers.

**Methods** Twenty patients with chronic MI (defined as subendocardial hyperenhancement on LGE) and normal LVEF and 20 healthy volunteers underwent CMR at either 1.5T or 3.0T (Phillips Achieva TX). Standard bSSFP cine images were used to calculate LV dimensions and GLS by feature tracking (CVI 42,

Circle Cardiovascular Imaging Calgary, Canada). LGE imaging was performed in all patients (0.2mmol/kg Gadolinium DTPA). **Results** Patients were matched for age ( $59.8 \pm 12$  vs  $59.6 \pm 5.4$   $p = 0.95$ ) and EF ( $60.4 \pm 3.8$  vs  $62.2 \pm 3.5$   $p = 0.11$ ). Visual evidence of RWMA was present in 13/20 (65%) of chronic MI patients and 0/20 healthy volunteers. GLS was significantly lower in patients with chronic MI than in those without ( $-16.07 \pm 3.9$  vs  $-19.79 \pm 2.3$   $p = 0.001$ ) (Figure 1). **Conclusion** GLS is impaired in patients with chronic MI but normal LVEF. GLS identifies abnormalities in LV systolic contraction not apparent with EF alone. It may reveal chronic MI in patients with contraindications to gadolinium-based contrast or prognostication of this subset of chronic MI patients. GLS could be used to detect chronic MI by alternative imaging modalities.

### 10 QUANTITATIVE MYOCARDIAL PERFUSION AND LONGITUDINAL STRAIN BY FEATURE TRACKING IN NEWLY DIAGNOSED, TREATMENT NAÏVE RHEUMATOID ARTHRITIS

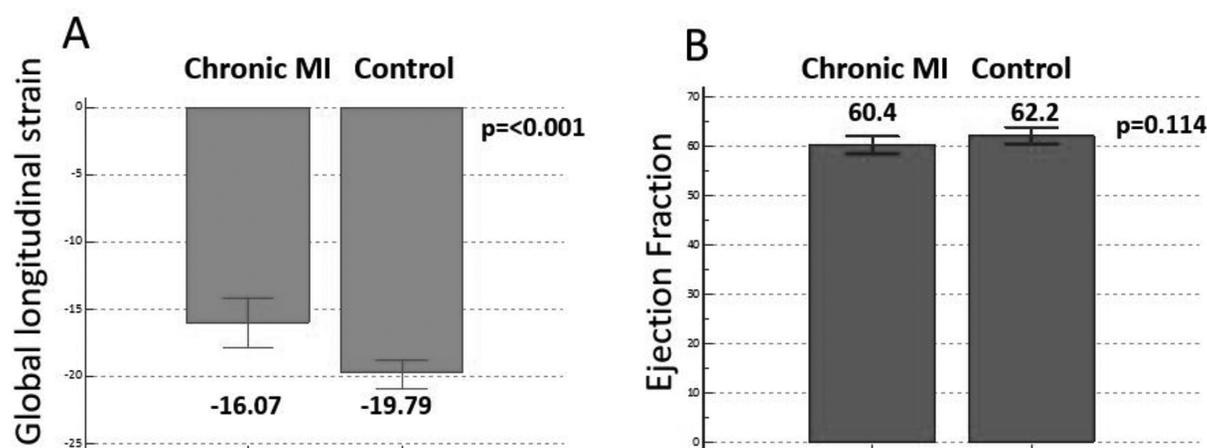
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**Objectives** Rheumatoid arthritis (RA) is associated with increased cardiovascular mortality. Proposed mechanisms include coronary microvascular dysfunction due to immune dysregulation and systemic inflammation.

First pass myocardial perfusion CMR allows quantification of myocardial blood flow (MBF) and myocardial perfusion reserve (MPR). In the absence of coronary artery disease (CAD), reduced MPR represents coronary microvascular dysfunction. We hypothesised MPR would be reduced in RA and that abnormalities in left ventricular (LV) deformation would be evident in RA, as LV mass has been reported to be reduced in established disease.

**Methods** Twelve patients with newly diagnosed, treatment naïve RA and 12 healthy volunteers (HV) underwent CMR at 3.0T (Phillips Achieva TX). Both groups had no history of CAD. Dual bolus resting and stress perfusion imaging was performed (0.1mmol/kg Gadolinium DTPA) and MBF estimated for the mid ventricular slice using Fermi constrained convolution (PMI v 0.4 [Sourbron, 2009]). Left ventricular ejection fraction (LVEF) and global longitudinal strain (GLS) by feature tracking



**Abstract 9 Figure 1** Graphs showing (A) GLS and (B) LVEF in chronic MI vs controls