and follow-up. Clinical and electrocardiographic markers of MI severity are predictors of interstitial expansion in the infarct zone in STEMI patients.

6 SEGMENTAL VARIATION IN MYOCARDIAL EXTRACELLULAR VOLUME IN HEALTHY MID-LIFE ADULTS

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Background Myocardial extracellular volume (ECV) can be estimated by cardiac magnetic resonance imaging (CMR) using pre- and post-contrast T1 MOLLI maps. The age and sex associations with myocardial ECV in healthy mid-life adults are uncertain.

Methods Healthy adults without any history of cardiovascular disease or treatment underwent contrast-enhanced CMR at 1.5 Tesla (Siemens MAGNETOM Avanto). T1 mapping with MOLLI was performed before and 15 min after contrast (0.15 mmol/kg gadoterate meglumine). ECV was estimated in regions (AHA 16-segment LV model) and for the whole left ventricular (LV) myocardium (all regions). ECV was calculated as the difference in relaxation rate (R1=1/T1) for myocardium and LV blood pool before vs. after gadolinium contrast administration, corrected for haematocrit (HCT). LV segments which were not evaluable due to artefact were excluded from analysis.

Results 114 segments were assessed from 19 subjects (mean age 61 ± 12 years; 10 (53%) male). 21 (18%) segments were excluded due to blood pool artefact or signal drop-out in the pre-contrast T1 MOLLI scan. All segments were evaluable in the post-contrast T1 MOLLI scans. The remaining segments for each subject were averaged to give an overall ECV (global LV). The mean ECV for all subjects was 25.6 ± 2.9%. There was no segmental variation in ECV. ECV in females was higher than in males, which was attributable to higher ECV in the septum in females. This sex difference merits further study. If these results are confirmed by other studies, then sex-specific reference ranges for ECV would seem appropriate.

Conclusion In this preliminary analysis, myocardial ECV was higher in women than in men, which was attributable to higher ECV in the septum in females. This sex difference merits further study. If these results are confirmed by other studies, then sex-specific reference ranges for ECV would seem appropriate.
Background The success of emergency coronary reperfusion therapy in ST-elevation myocardial infarction (STEMI) is commonly limited by failed tissue perfusion.

Purpose To assess the clinical significance of myocardial haemorrhage using cardiac magnetic resonance (CMR) in survivors of acute STEMI and assess the temporal evolution of intramyocardial haemorrhage (IMH) versus microvascular obstruction (MVO) in a serial imaging subset.

Methods 286 reperfused STEMI patients underwent CMR 2–days and 6-months post-MI. IMH was taken to represent a hypointense infarct core with a T2* value <20 ms. 30 STEMI patients underwent serial CMR at 4 time points: 4–12 h, 3-days, 10-days and 6–7 months post reperfusion. Cardiovascular death or heart failure hospitalisation (CVD/HF) was independently assessed during follow-up.

Results 245 STEMI patients had evaluable T2* data and 101 (41%) patients had IMH. 133 (51%) patients had MVO. All of the patients with IMH had MVO. IMH was multivariately associated with adverse remodelling, independent of baseline LVEDV and longitudinal (Ell) strain assessed during follow-up.

Conclusion Left ventricular circumferential contractility differs between men and women, and the differences were regionalised to the antero-lateral myocardial regions where LV displacement is greatest.

Funding Medical Research Scotland project grant. Professor Berry was supported by a Senior Clinical Fellowship from the Scottish Funding Council.

Abstract 9 Table 1 Gender differences in Circumferential and Longitudinal Strain at 3T

<table>
<thead>
<tr>
<th></th>
<th>Ecc (%)*</th>
<th>Mean</th>
<th>Anterior</th>
<th>Antero-septal</th>
<th>Infero-septal</th>
<th>Inferior</th>
<th>Infero-lateral</th>
<th>Antero-lateral</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Men</strong></td>
<td>(n = 38)</td>
<td>18.19 ± 1.5</td>
<td>19.03 ± 3.4</td>
<td>17.13 ± 2.9</td>
<td>15.43 ± 2.9</td>
<td>19.56 ± 3.2</td>
<td>21.06 ± 3.1</td>
<td>19.56 ± 3.0</td>
</tr>
<tr>
<td><strong>Women</strong></td>
<td>(n = 39)</td>
<td>19.42 ± 2.8</td>
<td>21.29 ± 3.7</td>
<td>18.05 ± 3.7</td>
<td>16.48 ± 3.7</td>
<td>20.57 ± 4.2</td>
<td>21.33 ± 4.2</td>
<td>21.66 ± 3.9</td>
</tr>
<tr>
<td><strong>p-value</strong></td>
<td>0.020</td>
<td>0.008</td>
<td>0.235</td>
<td>0.178</td>
<td>0.241</td>
<td>0.760</td>
<td>0.01</td>
<td></td>
</tr>
</tbody>
</table>

*pValues expressed as mean ± standard deviation

9SEX DIFFERENCES IN CIRCUMFERENTIAL AND LONGITUDINAL STRAIN ASSESSED USING STRAIN ENCODED CARDIAC MAGNETIC RESONANCE AT 3.0T

1G Clerfond, 1K Margin, 1D Carrick, 1SM Rauhalammi, 1D Corcoran, 1P Hall Barrientos, 1C McComb, 1J McClure, 1A Radjenovic, 1JCB Berry. 1BHF Glasgow Cardiovascular Research Centre, University of Glasgow, UK; 2West of Scotland Heart and Lung Centre, Golden Jubilee National Hospital, Clydebank, UK

10.1136/heartjnl-2015-307845.9

Background Displacement encoding with stimulated echoes (DENSE) encodes myocardial tissue displacement into the phase of the MRI image, thus allowing direct quantification of myocardial displacement at multiple cardiac phases. Strain-encoded CMR with DENSE has high spatial (3.2 mm × 3.2 mm × 8 mm) and temporal resolution (TR= 27.34 ms). We aimed to measure myocardial strain values with DENSE in healthy adults across a broad age range at 3.0 Tesla.

Methods Healthy volunteers with no prior medical history or treatment were enrolled and underwent CMR at 3.0T (Magnetom Verio, Siemens healthcare, Erlangen, Germany). Mid-left ventricular short axis and horizontal long axis DENSE sequences were acquired and analysed using CIM_DENSE2D software (University of Auckland, New Zealand and Siemens Healthcare). Segmental and global myocardial circumferential (Ecc) and longitudinal (Ell) strain were obtained.

Results Ecc and Ell were analysed in 77 volunteers (mean age 45 ± 18 years, 49% male) (Table 1). Mean Ecc strain was greater in women than in men. These sex-differences were mainly related to strain values in the anterior and antero-lateral LV segments. There is no difference for Ell.

Conclusion Left ventricular circumferential contractility differs between men and women, and the differences were regionalised to the antero-lateral myocardial regions where LV displacement is greatest.

Funding Medical Research Scotland project grant. Professor Berry was supported by a Senior Clinical Fellowship from the Scottish Funding Council.

Abstract 10 Table 1 Gender differences in Circumferential and Longitudinal Strain Revealed by Strain-encoded Cardiac Magnetic Resonance in Healthy Volunteers at 1.5T

<table>
<thead>
<tr>
<th></th>
<th>Ecc (%)*</th>
<th>Mean</th>
<th>Anterior</th>
<th>Antero-septal</th>
<th>Infero-septal</th>
<th>Inferior</th>
<th>Infero-lateral</th>
<th>Antero-lateral</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Men</strong></td>
<td>(n = 38)</td>
<td>10.53 ± 2.4</td>
<td>12.20 ± 3.6</td>
<td>14.53 ± 5.0</td>
<td>12.83 ± 4.5</td>
<td>12.55 ± 4.1</td>
<td>13.55 ± 4.3</td>
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</tr>
<tr>
<td><strong>Women</strong></td>
<td>(n = 39)</td>
<td>11.66 ± 2.6</td>
<td>11.83 ± 4.4</td>
<td>16.98 ± 4.2</td>
<td>15.29 ± 4.7</td>
<td>12.56 ± 4.3</td>
<td>13.40 ± 4.4</td>
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<tr>
<td><strong>p-value</strong></td>
<td>0.052</td>
<td>0.687</td>
<td>0.024</td>
<td>0.021</td>
<td>0.992</td>
<td>0.801</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*pValues expressed as mean ± standard deviation

10SEX DIFFERENCES IN CIRCUMFERENTIAL AND LONGITUDINAL STRAIN REVEALED BY STRAIN-ENCODED CARDIAC MAGNETIC RESONANCE IN HEALTHY VOLUNTEERS AT 1.5T

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10.1136/heartjnl-2015-307845.10

Background Displacement encoding with stimulated echoes (DENSE) encodes myocardial tissue displacement into the phase of the MRI image, thus allowing direct quantification of myocardial displacement at multiple cardiac phases. Strain-encoded CMR with DENSE has high spatial (3.2 × 3.2 × 8 mm) and temporal resolution (32.5 ms phase). We aimed to measure myocardial strain values with DENSE in healthy adults across a broad age range at 1.5 Tesla.

Methods Healthy volunteers with no prior medical history (including cardiovascular health problems or medication) were enrolled and underwent CMR at 1.5T (Magnetom Avanto, Siemens Healthcare, Erlangen, Germany). Mid-left ventricular short axis and horizontal long axis DENSE sequences were