Conclusions: Myocardial T1 and EVF were found abnormal in the subepicardium of patients with acute myocarditis, but much less than the subendocardium of patients with chronic MI. A range of T1 and EVF alterations can be demonstrated with MOLLI. Further investigation will indicate whether the severity and EVF changes might help refine the predictive risk of LGE in various cardiac conditions. In myocarditis, T1 and EVF provide complementary information to T2 mapping, which senses both intra and extracellular compartments.

115

Prognostic value of CMR criteria for LV functional improvement in patients with acute myocarditis

Emmanuelle Vermes (1), Peter Faris (2), Matthias Friedrich (2)

(1) CHU Trousseau, radiologie, Chambry Les Tours, France – (2) Université de Calgary, Calgary, Canada

Background: Standard diagnostic CMR criteria (“Lake Louise Criteria”) indicate acute myocarditis, if at least 2 out of the following 3 criteria are positive: (1) Myocardial edema/T2, (2) hyperemia/capillary leakage/early Gd enhancement ratio (EGE ratio) and (3) irreversible injury/late Gd enhancement (LGE). However, there is a lack of prognostic data using these criteria regarding LV functional improvement.

Methods: We studied 37 patients referred for acute myocarditis during admission and after a 12-month follow-up. CMR studies included T2-weighted and contrast-enhanced T1-weighted (EGE ratio and LGE) sequences. Global edema was defined as T2 SI ratio (normalized to skeletal muscle) of ≥2 and regional edema as a regional area of SI ≥2SD, consisting of at least 10 conjoint pixels. LV function was analysed using long axis views. An increase by at least 5% was considered improvement.

Results: Out of a total of 37 patients, 29 met the CMR Lake Louise Criteria (LL+) and 8 did not (LL-). Baseline and 12-month EF were significantly lower in LL+ (53.2±8 vs. 62.2±5; p=0.007 and 58.9±4 vs. 62.9±5; p=0.0045 respectively). At follow up, EF increased in LL+ but not in LL- groups (delta EF:5.7±9.8 vs. 0.7±2). The presence of global and/or regional myocardial edema was strongly associated with an increase of EF ≥5% (see table).

<table>
<thead>
<tr>
<th>Lack of EF increase (Δ EF &lt; 5%)</th>
<th>EF increase (Δ EF ≥ 5%)</th>
<th>All patients (n=37)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=26</td>
<td>n=11</td>
<td>n=37</td>
</tr>
<tr>
<td>LL +</td>
<td>18 (69.2%)</td>
<td>11 (100%)</td>
</tr>
<tr>
<td>Edema +</td>
<td>15 (57.7%)</td>
<td>11 (100%)</td>
</tr>
<tr>
<td>EGE +</td>
<td>17 (65.3%)</td>
<td>11 (100%)</td>
</tr>
<tr>
<td>LGE+</td>
<td>17 (65.3%)</td>
<td>8 (72.7%)</td>
</tr>
</tbody>
</table>

In a multivariate analysis, the presence of global and/or regional edema on admission was the only independent predictor of an increase of EF (beta=0.428, p=0.009)

Conclusion: In patients with clinically suspected acute myocarditis, the presence of positive CMR Criteria is associated with LV function recovery. Myocardial edema as defined by CMR was the strongest parameter, indicating that the observed increase of EF may be due to recovery of reversibly injured myocardium.

116

Quantitative analysis of microvascular obstruction is bestly related to clinical prognosis than clinical markers at a 1 year follow-up: a contrast-enhanced MRI study

Marie Le Nezet, Loïc Biere, Victor Mateus, Sylvain Grall, Guillaume Clerfond, Fabrice Prunier, Alain Farber

CHU Angers, cardiologie, Angers, France

Objectives: To evaluate the clinical prognostic value of a cardiac magnetic resonance (CMR) assessment soon after a first ST-segment elevation myocardial infarction (STEMI).

Background: Clinical factors such as gender, age, blood pressure, heart rate, heart and renal failure have already been described as related to poor clinical prognosis at follow-up. For now, the prognostic value and weight of CMR parameters is not well-defined.

Methods: We followed for 1 year up to 168 consecutive patients with a first STEMI treated with primary angioplasty. We performed CMR at day 5±2 and 3 months to assess LV volumes. We used delayed enhancement imaging to assess the infarct size and the presence of MVO. We defined severe MVO as MVO extent being superior to its median value (2.82 gr).

Results: 13 major adverse cardiac events (MACE) including 2 cardiac deaths, 12 non-fatal myocardial infarctions, 8 readmissions for heart failure and 4 stroke were documented. In univariate analysis, the MACE was related to age, creatin kinase peak, heart failure, MVO and LV volumes. In a complete multivariate analysis, age (hazard ratio 1.075, p=0.003), end-diastolic LV volume (HR 0.74, p=0.017), end-systolic LV volume (HR 1.046, p=0.039), MVO presence (HR 8.867, p=0.041; Log rank=9.195, p=0.002) and severe MVO (HR 9.906, p=0.002; Log rank=18.090, p<0.001) were the only independent prognostic variables. Note, clinical marker such as heart failure was strongly related to age and found as non significant in multivariate analysis.

Conclusions: A comprehensive CMR assessment is useful for stratifying risk soon after STEMI, baseline LV volumes and severe MVO are the stronger independent prognosis factors. This result supports the clinical interest of a quantitative assessment of MVO.

117

Direct comparison of stress Thallium-201/Rest Technetium-99m dual isotope perfusion imaging with Cadmium-Zinc-Telluride detector versus standard dual detector camera

Gilles Barone-Rochette (1), Mélanie Leclere (2), Alex Calizzano (3), Catherine Ghezzi (4), Gérard Vanzetto (1), Daniel Fagret (3)

(1) CHU Grenoble, USIC, Grenoble, France – (2) CHU Grenoble, cardiologie, Grenoble, France – (3) CHU Grenoble, médecine nucléaire, Grenoble, France – (4) Unité Inserm 1039, Grenoble, France

Introduction: Recent advances in nuclear myocardial perfusion imaging (MPI) have provided opportunity for improved image information with an important reduction of exam time and radiation. This technology can be used to explore novel protocols (dual isotope high-speed MPI). Today, two devices exist: D-SPECT and Discovery NM 530c (DNM) camera. With D-SPECT, it was showed that rapid stress Ti-201/rest Tc-99m protocol for use with high-speed MPI has offered the superior qualities of Ti-201 for stress imaging and of the Tc-99m agents for rest imaging can be preserved. However, no study has evaluated the same dual-isotope protocol with the other system.

Methods: A total of 38 consecutive patients underwent simultaneous dual-radionuclide (stress thallium-201/rest technetium-99m) perfusion imaging with a DNM camera and standard dual detector camera (S-SPECT) during the month of May 2011.

Results: All patients successfully underwent stress/rest MPI with both cameras. In 38 patients (50%) pharmacological stress was induced with dipyridamole, DNM SPECT SSS and SRS correlated linearly with conventional S-SPECT respective scores (r=0.84, p=0.0001 for SSS, and r=0.94, p<0.0001 for SRS). On Bland-Altman analysis there was good agreement between the two imaging methods with a shift for both SSS and SRS (mean...