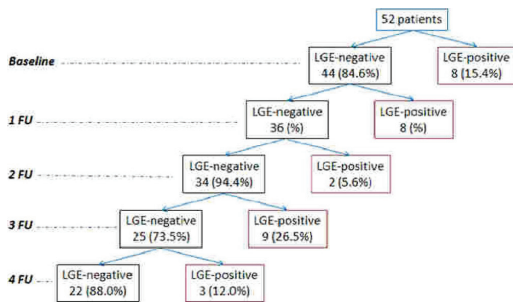


28 females) consecutively enrolled in the Myocardial Iron Overload in Thalassemia (MIOT) Network who underwent 5 LGE CMRs (baseline + 4 follow-up) using Gadobutrol (0.2 mmol/kg). The time interval between two subsequent scans was 18±3 months.

**Results:** At the baseline CMR, 44 patients (84.6%) were LGE-negative.

Eight new occurrences of myocardial fibrosis were detected at the first follow-up (FU). At the second FU, 2 out of the 36 previously LGE-negative patients had myocardial fibrosis. At the third FU, 9 new occurrences of myocardial fibrosis were detected. At the fourth FU, 3 patients showed myocardial fibrosis for the first time. The figure shows a simplifying flow-chart.

The 22 patients who developed myocardial fibrosis during the follow-up showed comparable frequency of diabetes and HCV infection and comparable baseline cardiac iron than patients who remained always LGE-negative.



**Conclusion:** A serial monitoring of thalassemia patients revealed an high number of new occurrences of myocardial fibrosis, suggesting the importance of repeating the LGE CMR over time using 'low risk' macrocyclic agents.

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#### P4690

##### Impact of myocardial viability assessed by delayed enhancement cardiovascular magnetic resonance on clinical outcomes in real world practice

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**Background:** Delayed enhancement cardiovascular magnetic resonance imaging (DeCMRI) has become the preferred method for viability assessment. It is well established that viable dysfunctional myocardium has the potential for functional recovery after revascularization.

**Purpose:** Our objective is to evaluate whether viability assessment by DeCMRI affects clinical outcome in daily clinical practice.

**Methodology:** We retrospectively studied 132 consecutive patients (114 male, mean age 59 ± 10 years) with ischaemic cardiomyopathy (Mean LVEF: 29.1 ± 14%) who underwent CMRI viability testing from 1st Jan- 31st Dec 2015 in our centre. Patients were divided into 3 groups: Group A: Viable myocardium- optimal medical therapy only (38.6%); B: Viable myocardium- revascularization done (29.5%); and C: Non-viable myocardium (29.5%).

**Results:** Mean age for groups A, B and C were 61.2, 58.3, 56.2 years respectively, p=0.048. The proportion of triple vessel disease in each of the groups were 56.1%, 54.5% and 38.5% (p=0.44); whereas left main involvement was 31.7%, 21.2% and 19.2% respectively (p=0.43). Majority of group C patients did not undergo revascularisation (90%). Group B had statistically significant EF improvement (5.5%, SD 11.9) compared to Group A (-0.6%, SD 6.7) and Group C (-1.2%, SD 9.8), p value 0.014. Mortality at 1 year was significantly higher in Group A compared to Group B and C (31.4%, 7.7% and 12.8% respectively, p=0.009). MACE rates were also increased in Group A compared to the other two groups (41.2%, 20.5% and 27.0%, p=0.09). Odds Ratio for MACE was 3.01 (95% CI 1.22–7.45) for Group A vs B and 2.8 (95% CI 1.1–6.9) for Group A vs C.

**Conclusion:** Patients with viable myocardium who did not undergo revascularization (group A) had the worst prognosis, even when compared to those with non-viable myocardium; with significantly higher 1 year mortality. Although not statistically significant, there was also a trend towards higher MACE in these patients. These findings emphasize that patients with poor LV function but viable myocardium need to undergo revascularisation and that optimal medical therapy alone is not sufficient.

#### P4691

##### Presence of late gadolinium enhancement and left atrial ejection fraction as predictors of stroke and thromboembolism in patients with hypertrophic cardiomyopathy - a cardiovascular MRI study

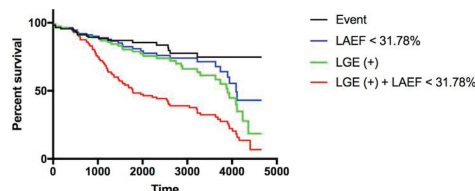
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**Objectives:** Hypertrophic cardiomyopathy (HCM) is a complex genetic heart disease. Thromboembolic complications and stroke are known complications in HCM. We sought to assess the clinical and cardiovascular magnetic resonance (CMR) characteristics of patients with HCM suffering from thromboembolic events and analyzed the predictors of these unfavorable outcomes.

**Methods:** A total of 118 consecutive patients with HCM were enrolled and underwent late gadolinium enhanced (LGE) CMR.

**Results:** The clinical endpoint of systemic embolism and ischemic stroke occurred in 20 (16.9%) patients of our study population (n=118). 13 (65.0%) of these 20 patients with thromboembolic events were men. During the follow-up of 5.6±3.6 years, 8 (10.2%) patients with HCM died, mostly not due to thromboembolic events. The mortality rate was significantly higher in the event-group (20.0% vs 8.2%, p<0.0001). 7 (35.0%) patients in the event-group (EG) presented with severe heart failure symptoms (NYHA III/IV) whereas 14 (14.3%) patients in the non-event-group (NEG) suffered from similar symptoms (p<0.05). The prevalence of atrial fibrillation was significantly higher in the EG (EG 9 (45.0%) vs NEG 19 (19.4%), p<0.01), as well as the presence (EG 19 (95.0%) vs NEG 62 (63.3%), p<0.01) and extent (EG 21±15% vs NEG 12±14%, p<0.01) of late gadolinium enhancement (LGE). Furthermore, patients who suffered from a thromboembolic endpoint revealed a significantly reduced right ventricular ejection fraction (RVEF) (EG 57±11% vs NEG 62±10%, p<0.05) and the right atrial diameter (RAD) (EG 48±6mm vs NEG 42±8mm, p<0.01) was significantly larger. No difference in left ventricular ejection fraction (EG 57.2±10.2 vs NEG 61.3±10.2, p=0.0590), or average MAPSE (EG 0.85±0.28cm vs NEG 1.00±0.31cm, p=0.1273) could be detected. LA ejection fraction was significantly reduced in the event-group (EG 24±13% vs NEG 41±15%, p<0.0001) compared to patients with HCM without thromboembolic events during follow-up. Univariate analysis revealed a statistically significant relationship of these parameters with the clinical endpoint. In multivariate analysis the presence of LGE (HR 0.086, 95% CI 0.01–0.71, p=0.02) and LA ejection fraction (HR 0.96, 95% CI 0.92–0.99, p=0.04) were found to be the only independent predictors of thromboembolic events in patients with HCM.



Kaplan-Meier estimates

**Conclusion:** The presence of LGE and a reduced left atrial ejection fraction are predictors of thromboembolic complications in patients with HCM and might therefore be an important early risk marker.

**Funding Acknowledgements:** DZHK (German Centre for Cardiovascular Research) partner site Mannheim, Germany

#### P4692

##### Endurance training is associated with increased left atrial fibrosis

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**Background:** It is hypothesized that degree of left atrial (LA) fibrosis detected by late gadolinium-enhancement (LGE) MRI correlates with risk of developing atrial arrhythmias. Endurance athletes (EAs) have been noted to have a high incidence of AF and while myocardial fibrosis has been documented in this population, techniques to quantify LA fibrosis is lacking.

**Purpose:** Using LGE-MRI, we sought to quantify the degree of LA fibrosis in healthy EAs compared to healthy controls.

**Methods:** We recruited sixteen endurance athletes >35 yrs old who have participated in ≥10 yrs of competitive endurance sports and actively train for ≥10 hrs/wk. Endurance activities included: running, cycling, rowing, and nordic skiing. Questionnaires regarding medical history and training exposure were performed. Twenty healthy control subjects were recruited during screening colonoscopies. All participants underwent cardiac MRI with 3D visualization using processing software.

**Results:** Overall athletes were younger, had a lower BMI and fewer comorbidities. Mean LA fibrosis score, reported as a percentage, was 13.7% ± 5.4 in EAs compared to 11.8% ± 7.3 in the controls. When controlling for both age and BMI, both known to affect LA fibrosis, being an EA was associated with 6% more LA fibrosis compared to controls (p=0.05). Endurance athlete exposure (R<sup>2</sup> = 0.16) had a greater impact on degree of fibrosis than any comorbidity including diabetes, hypertension and tobacco use.

**Conclusion:** We report a significant correlation between endurance training and