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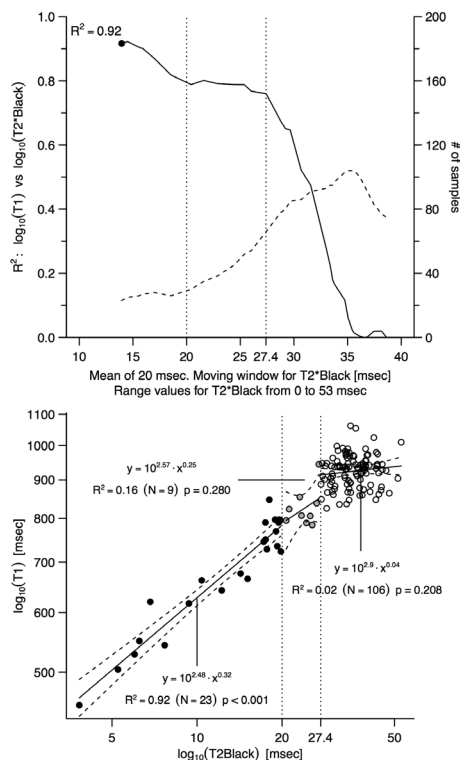
# ROLE OF T1 MAPPING AS A COMPLEMENTARY TOOL TO T2\* FOR NON-INVASIVE CARDIAC IRON OVERLOAD ASSESSMENT

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**Background** Iron overload-related heart failure is the principal cause of death in transfused Thalassemia Major<sup>1-2</sup> and other iron overload patients. Linking cardiac siderosis measured by T2\* to therapy improves outcome in Thalassemia Major. Aim of our study is to compare T1 mapping (Modified Lock Locker Inversion recovery, MOLLI) to dark (DB) and bright (BB) blood T2\*<sup>3-4</sup> in cardiac iron overload and to support the hypothesis that T1 mapping has higher sensibility to T2\* for small amount of iron, which would make it a complementary tool to T2\* in borderline iron overload patients.<sup>5-6</sup>

**Methods** In a prospectively large single centre study of 138 Thalassemia Major patients and 32 healthy controls, we compared MOLLI to DB and BB T2\* acquired on an Avanto 1.5T scanner (Siemens Healthcare, Erlangen, Germany). Linear regression analysis was used to assess the association between DBT2\* and either BBT2\* and MOLLI, and the determination coefficient was computed in a log-log scale with moving windows to detect the point where this association decreases.



Abstract 006 Figure 1

**Results** The relationship between T2\* (here DB) and MOLLI is described by a log-log linear regression, which can be split in three different slopes: 1) T2\* low, <20ms:  $r^2=0.92$ ; 2) T2\*=20–28 ms:  $r^2=0.80$ ; 3) T2\*>28 ms, no relationship. All subjects with T2\*<20 ms had low T1; of those with T2\*>20 ms, 38% had low T1.

**Conclusions** These data support the former proposal that T1 detects missed iron in 3 subjects with normal T2\* and that T1 mapping is a complementary tool for non-invasive assessment of cardiac iron. The clinical significance of a low T1, normal T2\* should be further investigated. A trend toward LV end diastolic volume increase was observed in the patients with low T1 and normal T2\* at 24 months, but the sample was too small to be analysed ( $n=9$ ).

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# COMPREHENSIVE ECHOCARDIOGRAPHIC AND CARDIOVASCULAR MAGNETIC RESONANCE EVALUATION DIFFERENTIATES BETWEEN PATIENTS WITH HEART FAILURE WITH PRESERVED EJECTION FRACTION, HYPERTENSIVE PATIENTS AND HEALTHY CONTROLS AND IDENTIFIES THOSE WITH REDUCED EXERCISE CAPACITY ON CARDIOPULMONARY EXERCISE TESTING

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**Objectives** The aim of this study was to investigate the utility of a comprehensive imaging protocol including echocardiography and cardiovascular magnetic resonance (CMR) in the diagnosis and differentiation of hypertensive heart disease and heart failure with preserved ejection fraction (HFpEF).

**Background** Hypertension is present in up to 90% of patients with HFpEF and is a major aetiological component. Despite current recommendations and diagnostic criteria for HFpEF, no non-invasive imaging technique has as yet shown the ability to identify any structural differences between patients with hypertensive heart disease and HFpEF.

**Methods** We conducted a prospective cross-sectional study of 112 well-characterised patients (62 with HFpEF, 22 with hypertension and 28 healthy controls). All patients underwent cardiopulmonary exercise and biomarker testing and an imaging protocol including echocardiography with speckle tracking analysis and CMR including T1 mapping pre- and post-contrast.