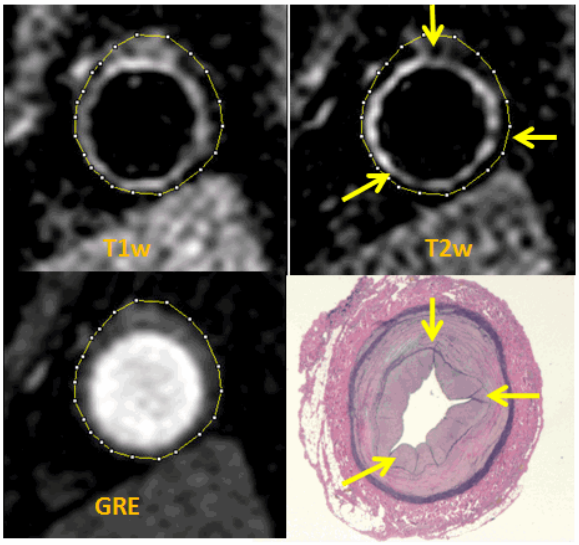

Figure 1. Different MRI contrasts to identify proliferative intima (hyperintensity, T2w), media (hypointensity, T2w), and lumen (hyperintensity, GRE). The pathology shows corresponding neointimal formation.

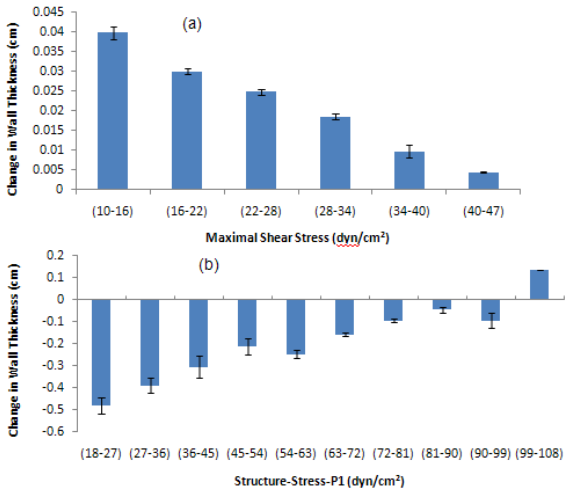

Figure 2. (a) Lower MSS leads to faster plaque growth in pig 1 during a progression; (b) Lower structure stress-P1 leads to faster plaque reduction in pig 2 during a regression

A MRI method and a fluid-structure-interaction model were employed to explore local biomechanics of plaque progression and regression in a porcine model. Structure stress, strain, and fluid shear stress all play different roles in the artherogenesis.

2102. THE ISCHEMIC AREA AT RISK CAN BE DETECTED BY BOTH T1 AND T2 PRE-CONTRAST CMR

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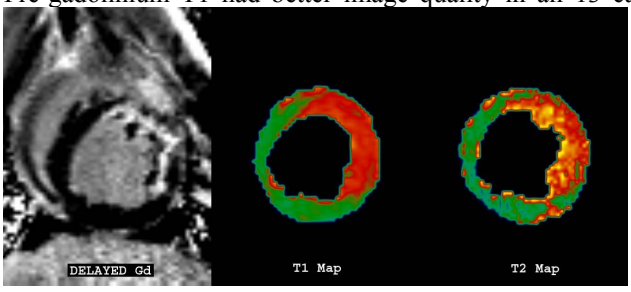
Introduction:
In-vivo T2-weighted CMR delineates the area at risk (AAR) and can be used in conjunction with delayed contrast enhancement to evaluate infarct reduction therapies.
Objectives:
We hypothesized that pre-gadolinium T1 CMR delineates the AAR in a similar manner to T2 imaging in acute myocardial infarction.
Methods:
Imaging was performed 3 days after LAD occlusion-reperfusion in13 dogs. T2 and T1 maps were computed from pre-gadolinium CMR with T2-prepared SSFP (14 TE's of 16-280ms) and with IR-GRE (10 TIs of 71-900ms) respectively. The infarcted territory was defined by post-gadolinium delayed enhancement. Two observers evaluated the images for the involvement of a single coronary distribution, for graininess and border definition of different areas.
Results:
A delayed contrast enhanced image (depicting the non-transmural infarct) and corresponding pre-gadolinium T2 and T1 maps (depicting the AAR) are shown in the Figure. In the T2 map, the AAR is red whereas normal myocardium is green. The areas on the T1 map agree with those in the T2 map in terms of circumferential and transmural extent. The average T2 value of the infarct, the peri-infarct zone and remote myocardium were 72±2, 57±2 and 46±3ms respectively. The corresponding average T1 values were 1020±18, 972±18 and 879±13. In all 13 cases the T1 maps exhibited better image quality than the T2 maps.
Conclusions:
The area at risk, as identified by T2-CMR, was identified by pre-gadolinium T1-CMR. Both methods could identify the infarct from the peri-infarct zone and remote myocardium. Pre-gadolinium T1 had better image quality in all 13 cases.



T1-CMR delineates the area at risk similarly to T2-CMR in acute myocardial infarction. Both T1 and T2 maps can differentiate the infarct from the peri-infarct zone and from remote myocardium. The T1 maps had better image quality than T2.