

## 5. 6 Breathhold Magnetic resonance coronary angiography with Vasovist: Initial experiences in volunteers.

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### Introduction

To assess Vasovist, a protein binding intravascular contrast agent, for breathhold magnetic resonance coronary artery imaging (MRCA).

### Material and Methods

24 volunteers (10 female, 14 male, mean age 29.8±6.1 years) were examined using a 1.5T scanner (Sonata, Siemens). For all exams 0.05mmol/kg body-weight of Vasovist were injected. T1-values of myocardium and blood were repetitively measured using a SSFP sequence with increasing inversion times (TR 2.4ms, TE 1.1ms, FA 50°) within the first 30 minutes after injection. MRCA was performed using breath hold inversion recovery FLASH sequences (TR 3.8ms, TE 1.6ms, FA 25°, voxel size 1.8–2.3mm<sup>3</sup>) and inversion recovery SSFP sequences (TR 3.8ms, TE 1.6ms, FA 65°, voxel size 1.8–2.3mm<sup>3</sup>) at multiple time points after injection. Data sets covering the three major coronary arteries were acquired. Signal-to-noise (SNR) and contrast-to-noise ratios (CNR) values were calculated. Image quality was assessed based on a 5-point scale ranging from 1 (excellent) to 5 (non-diagnostic).

### Results

T1 times of the myocardium (267.2±19.2 at 5 vs. 283.7±22.0 at 30 min p.i.) and blood pool (111.1±10.9 at 5 vs. 131.3±12.3 at 30 min p.i.) slightly increases over time. Mean SNR of blood showed no significant differences within the first 30 min after injection (23.6 at 1 vs. 21.2 at 30min p.i.), however, mean blood-myocardium CNR (18.1 at 1 vs. 13.8 at 30min p.i.) and images quality scores slightly degraded over time (2.9 at 1 vs. 3.8 at 30min p.i.) , based on the chosen parameters. Comparing the two sequences the IR-SSFP showed higher blood-myocardium CNR (21.0±4.3 vs. 15.8±4.3 p<0.05) and a better overall image quality (mean score 3.6 vs. 2.8 for IR-FLASH, p< 0.05).

### Conclusions

Our study demonstrated that contrast enhanced MRCA using Vasovist allows visualization of the coronary arteries with high SNR and CNR for at least 30 minutes after injection. IR-SSFP sequences seem to be better suited for contrast enhanced breathhold MRCA than IR-FLASH sequences.