

Poster presentation

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## Influence of left ventricular hypertrophy and geometry on diagnostic accuracy of wall motion and perfusion analysis during dobutamine stress magnetic resonance

Rolf Gebker\*, Jesus G Mirelis, Cosima Jahnke, Thomas Hucko, Robert Manka, Ashraf Haan, Bernhard Schnackenburg, Eckart Fleck and Ingo Paetsch

Address: German Heart Institute, Berlin, Germany

\* Corresponding author

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### Introduction

Despite the consistently high endocardial border visualization achieved with cine MR imaging, visual identification of developing wall motion abnormalities may be challenging in hypertrophied hearts.

### Purpose

To examine the influence of left ventricular hypertrophy and geometry on the diagnostic accuracy of wall motion and perfusion analysis during high dose dobutamine stress magnetic resonance (DSMR).

### Methods

Combined wall motion (DSMR) and perfusion imaging (DSMRP) was performed in a single session in 156 patients scheduled for invasive coronary angiography. Patients were classified into four categories based on LV mass (normal  $\leq 81$  g/m<sup>2</sup> in men,  $\leq 62$  g/m<sup>2</sup> in women) and relative wall thickness (RWT, normal  $< 0.45$ ): normal geometry, concentric remodeling, concentric hypertrophy and eccentric hypertrophy. Wall motion and perfusion images were interpreted sequentially, blinded to other data. Significant coronary artery disease (CAD) was defined as  $\geq 70\%$  stenosis.

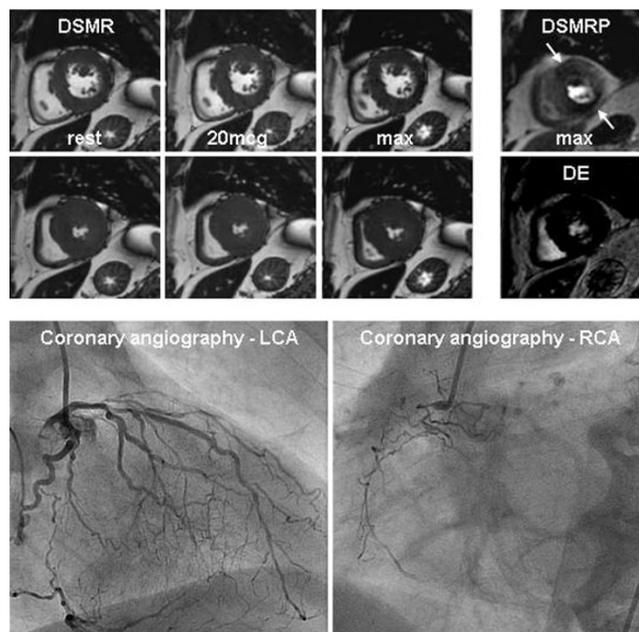


Figure 1

## Results

The accuracy of DSMR in patients with concentric hypertrophy (71%) or concentric remodeling (73%) was lower than in patients with normal geometry (83%,  $P < 0.05$ ) or eccentric hypertrophy (90%,  $P < 0.05$ ). While accuracy of DSMRP was higher compared to DSMR in patients with concentric hypertrophy (84% vs. 71%,  $P < 0.05$ ) and concentric remodeling (86% vs. 73%,  $P < 0.05$ ), accuracy of DSMR was superior compared to DSMRP (90% vs. 85%,  $P < 0.05$ ) in patients with eccentric hypertrophy, Figure 1.

## Conclusion

The accuracy of DSMR is influenced by LV mass and geometry. In patients with concentric remodeling and concentric hypertrophy additional first-pass perfusion imaging during high dose dobutamine stress improves the diagnostic accuracy for the detection of CAD.

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