

POSTER PRESENTATION

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Assessment of coronary artery disease using 3.0 T magnetic resonance coronary angiography: a national multicenter trial

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Background

3.0T contrast enhanced whole-heart coronary magnetic resonance angiography (MRA) is a promising method for noninvasive, radiation-free detection and exclusion of obstructive coronary artery disease (CAD); however, the accuracy of this approach has not been determined in a multicenter trial.

Methods

An ECG-triggered, navigator-gated, inversion-recovery prepared, segmented gradient-echo sequence was used for image acquisition in 272 patients with suspected CAD at 8 hospitals. The accuracy of coronary MRA for detecting a 50% diameter reduction was determined using X-ray coronary angiography as the reference method. Using an

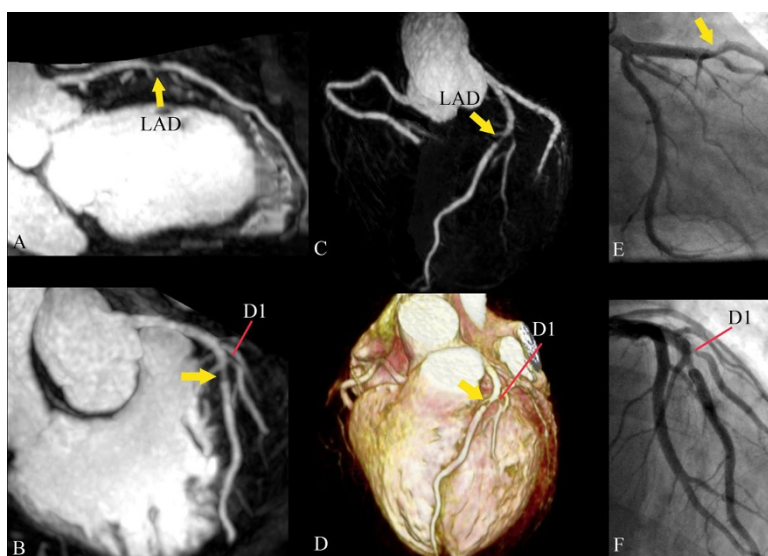


Figure 1 Curved planar reconstruction (CPR) image (A), Sliding thin slab maximum intensity projection (MIP) image (B), MIP image of coronary tree (C), and volume-rendered image (D) detect coronary artery stenoses in the LAD (arrow) and first diagonal branch (arrowhead). Good agreement is observed between coronary MRA and X-ray coronary angiography.

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intention-to-diagnose approach, all coronary arteries were included for the evaluation regardless of the image quality of coronary MRA to avoid overestimation of the diagnostic accuracy. Clinical Trial Registration—URL: <http://clinicaltrials.gov>. Unique identifier: NCT01024478.

Results

Acquisition of coronary MRA was successfully completed in 235 of 272 (86%) patients with average imaging time of 9.5 ± 1.6 minutes. The areas under the receiver-operator characteristic curve from MRA images according to vessel- and patient-based analyses were 0.90 (95% confidence interval [CI]: 0.88 to 0.95) and 0.88 (95% CI: 0.83 to 0.93), respectively. The sensitivity and specificity of MRA on per-patient basis were 91% and 80%, respectively.

Conclusions

Among patients who were scheduled to obtain conventional x-ray coronary angiography, we found that coronary MRA at 3.0T demonstrates high accuracy for detection of significant coronary artery stenosis. It warrants greater consideration as a suitable noninvasive method to exclude obstructive CAD.

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