

POSTER PRESENTATION

Open Access

Simultaneous assessment of myocardial scar and coronary artery disease by navigator-gated 3D fat-suppressed delayed-enhancement CMR: comparison with 2D delayed-enhancement CMR, CT and CAG

Yasuo Amano*, Tomonari Kiriya, Masaki Tachi, Yasuhiro Kobayashi, Tetsuro Sekine, Shinichiro Kumita

From 15th Annual SCMR Scientific Sessions
Orlando, FL, USA. 2-5 February 2012

Summary

The aim of this study was to assess the feasibility of navigator-gated 3D fat-suppressed delayed-enhancement CMR (DE-CMR) for simultaneous assessment of the myocardial scar and coronary artery disease, by comparing with 2D DE-CMR, CT, and CAG.

Background

Simultaneous assessment of myocardial scar or perfusion reduction and coronary artery stenosis is currently performed by side-by-side comparison or image fusion using coronary CTA and myocardial perfusion study, but the misregistration and differences in spatial resolution between imaging methods can be problematic. A CMR technique that can visualize both myocardial scar and coronary artery disease during a single examination may resolve this problem.

Methods

Sixteen patients underwent a navigator-gated 3D fat-suppressed DE-CMR using a 3.0T imager. The spatial resolution of this imaging was 1.5x1.25x3.0-3.4 mm³ before an interpolation. Inversion recovery and spectrally-selective pulses were used to suppress normal myocardial and epicardial fat signals, respectively. The ability of the navigator-gated 3D fat-suppressed DE-CMR to detect myocardial scar was compared with that of 2D DE-CMR. The signal reduction of coronary artery on the 3D DE-CMR was compared with calcified

plaques on CT (n = 13) and significant stenosis (> 75%) on CAG (n = 8). The relationship between myocardial scar and coronary arteries was also assessed in six patients with ischemic cardiomyopathies.

Results

Twenty-five myocardial scars on 2D DE-CMR, 66 coronary calcified lesions on CT, and six coronary stenoses on CAG were investigated in 16 patients. The navigator-gated 3D fat-suppressed DE-CMR detected 25 (92.6%) scars, 43 (65.1%) arterial signal reduction, and three (50%) coronary artery stenoses. When excluding the coronary arteries that were affected by respiratory artifacts, 84.3% of coronary artery diseases were detected by the 3D-CMR. This imaging showed the diffuse stenoses of coronary arteries, comparable to diffuse calcified plaques, in the patients with ischemic cardiomyopathy.

Conclusions

Navigator-gated 3D fat-suppressed DE-CMR was feasible for simultaneous assessment of the myocardial scar and coronary arteries with calcified plaques.

Funding

No disclosure for this presentation.

Published: 1 February 2012

Nippon Medical School, Tokyo, Japan

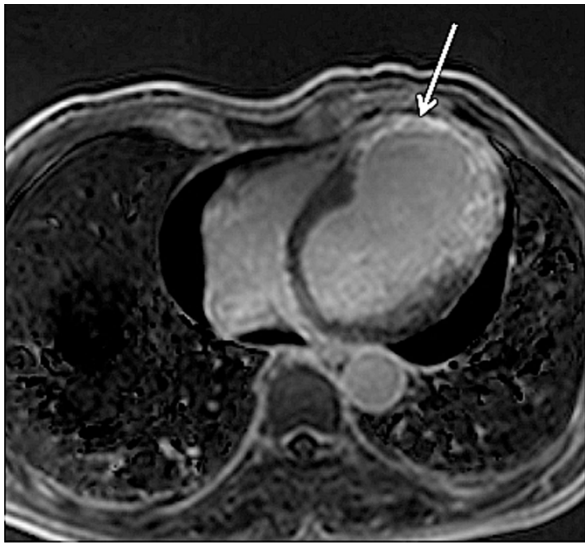


Figure 1 Navigator-gated 3D fat-suppressed DE-CMR shows myocardial scar following infarction.

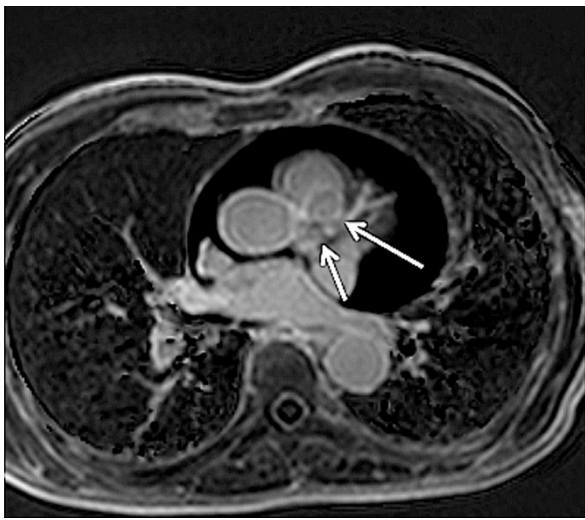


Figure 2 Navigator-gated 3D fat-suppressed DE-CMR shows signal reduction of coronary arteries simultaneously.

doi:10.1186/1532-429X-14-S1-P302

Cite this article as: Amano *et al.*: Simultaneous assessment of myocardial scar and coronary artery disease by navigator-gated 3D fat-suppressed delayed-enhancement CMR: comparison with 2D delayed-enhancement CMR, CT and CAG. *Journal of Cardiovascular Magnetic Resonance* 2012 **14**(Suppl 1):P302.

Submit your next manuscript to BioMed Central and take full advantage of:

- Convenient online submission
- Thorough peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- Inclusion in PubMed, CAS, Scopus and Google Scholar
- Research which is freely available for redistribution

Submit your manuscript at
www.biomedcentral.com/submit

 **BioMed Central**