

ORAL PRESENTATION

Open Access

3.0T motion-corrected single-shot phase sensitive inversion recovery (PSIR) late gadolinium enhancement (LGE) in free-breathing patients compared with conventional segmented breath-held LGE

Lu Lin¹, Yining Wang¹, Jian Cao^{1*}, Lingyan Kong¹, Jing An², Tianjing Zhang²

From 18th Annual SCMR Scientific Sessions
Nice, France. 4-7 February 2015

Background

Novel motion-corrected single-shot phase sensitive inversion recovery (PSIR) late gadolinium enhancement (moco-LGE) cardiovascular MR in 3.0T system may have advantages over conventional segmented breath-held LGE (bh-LGE), especially for vulnerable patients with arrhythmia or respiratory motions.

Methods

In a consecutive cohort of 58 patients referred for clinical enhanced cardiac MR, bh-LGE and moco-LGE were collected contemporarily with identical image parameters using a 3.0T scanner. The moco-LGE was acquired just after the bh-LGE while the patients were asked to breathe freely. Images were randomized and scored for image quality (1-very poor and not analyzable, 2-poor, 3-acceptable, 4-good, 5-very good) and diagnostic confidence for myocardial LGE (1-low confidence, 2-some confidence, 3-high confidence) separately base on the American Heart Association 17-segmented model. In patients with diagnostic image quality and definite LGE with identifiable margin, the myocardial LGE mass was quantified. Paired t test was used to compare the image quality, diagnostic confidence. Linear regression and correlation plots were used to compare LGE mass.

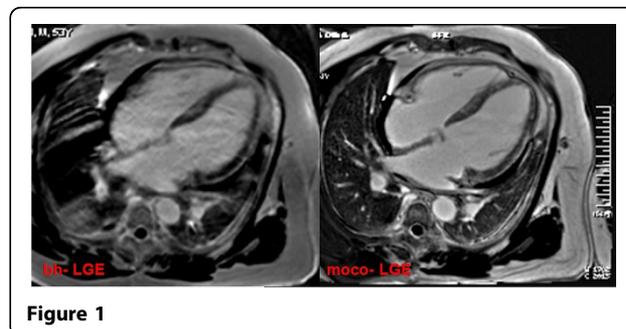
Results

55 patients had regular heart rate (HR), the mean HR was 78 ± 14 beats per minute (bpm). The other 3 patient

had irregular HR including atrial fibrillation and atrial flutter. In all the patients, the moco-LGE with free-breathing had similarly high image quality (3.9 ± 0.9 vs 3.7 ± 0.9 , $P=0.410$), and diagnostic confidence (2.8 ± 0.3 vs 2.7 ± 0.4 , $P=0.743$) compared with bh-LGE. A total of 16 patients with marked image artifacts in bh-LGE for arrhythmia or respiratory motion, moco-LGE had significantly higher image quality (3.8 ± 0.8 vs 3.0 ± 0.9 , $P=0.000$) and confidence (2.8 ± 0.2 vs 2.4 ± 0.4 , $P=0.000$). The myocardial LGE mass was quantified and compared in 22 patients, the results correlated highly ($R^2=0.95$, $P=0.000$) without bias.

Conclusions

In general, moco-LGE and bh-LGE have similar image quality and myocardial LGE quantification. In vulnerable patients with marked artifacts of bh-LGE, moco-LGE



¹Radiology, Peking Union Medical College Hospital, Beijing, China
Full list of author information is available at the end of the article

probably has higher image quality and diagnostic confidence.

Funding

N/A.

Authors' details

¹Radiology, Peking Union Medical College Hospital, Beijing, China. ²Siemens Shenzhen Magnetic Resonance Ltd., Beijing, China.

Published: 3 February 2015

doi:10.1186/1532-429X-17-S1-O61

Cite this article as: Lin *et al.*: 3.0T motion-corrected single-shot phase sensitive inversion recovery (PSIR) late gadolinium enhancement (LGE) in free-breathing patients compared with conventional segmented breath-held LGE. *Journal of Cardiovascular Magnetic Resonance* 2015 17(Suppl 1):O61.

**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

