Reviewer's report

Title: Lipomatous Metaplasia Incidentally Identified in Rabbits with Evolving Reperfused Myocardial Infarction: 3.0T Magnetic Resonance Imaging and Histopathology Findings

Version: 1 Date: 19 November 2012

Reviewer: Satoshi Okayama

Reviewer's report:

This manuscript describes that 3.0 T cardiac MRI is useful for the evaluation of lipomatous metaplasia. I am very interested in the fact that the image characteristics of lipomatous metaplasia can change as time goes on. This study is considered to take a lot of time and effort. However the interest of this result is not sufficiently conveyed to readers unfortunately.

Major Compulsory Revisions
This manuscript contains many grammatical and other errors, and thus should be proofread. The description is redundant and lengthy. The useful messages to the readers of BMC imaging are not clearly described in discussion.

Minor Essential Revisions
1. Title is lengthy. I consider that “incidentally” is unnecessary, and prefer the following title.
   “Lipomatous Metaplasia Identified in Rabbits with Reperfused Myocardial Infarction by 3.0 T Magnetic Resonance Imaging and Histopathology”

2. Line 2-9, page 4, background.
   Please refer to the following sentences.
   “The moderate size rabbit model of occlusion/reperfusion-induced myocardial infarction (MI) has been frequently evaluated by 1.5 T magnetic resonance imaging (MRI) scanner. 3.0T MRI scanner with 8-channels or more cardiac array coils can obtain cardiac images with higher signal-to-noise-ratio (SNR), temporal and spatial resolutions, and shorter acquisition time compared to the conventional 1.5 MRI scanner, however there are few reports on the evaluation of rabbit model of occlusion/reperfusion-induced myocardial infarction by 3.0T scanner.”

   The purpose of this study is unclear, and I recommend that third paragraph starts with the sentence of “The purposes of this study were as follows: ”

   I understand that the purposes are as follows.
(a) Longitudinal evaluation of myocardial infarction by 3.0 T MRI scanner
(b) Comparison of myocardial infarction on acute phase between MRI findings and histopathology
(c) Comparison of lipomatous metaplasia on chronic phase between MRI findings and histopathology

Time schedule of the experiments should be added, which will make it easy to understand the methods.

There are too many abbreviations in this manuscript.
We consider that “TA” is less commonly used as an abbreviation for “acquisition time”.

In many human studies, both late enhancement and cine imaging use no fat suppression. Lipomatous metaplasia can be thus detected as hyperintensity area on late enhancement images, although cannot be differentiated from myocardial fibrosis.
For avoiding misunderstanding, “3D delayed-enhancement imaging with fat suppression” should be used.

8. Line 1, page 7, Methods.
There are too many abbreviations in this manuscript.
We consider that “MIS” is less commonly used as an abbreviation for “myocardial infarction size”.

Correct the sentence, as follows.
“The global MI size were represented as the percentage of left ventricular mass volume (%LV).”

10. Line 12, page 8, Results.
Add the value of r2.

11. Line 15-16, page 8, Results.
Correct the sentence, as follows.
“A hyperenhanced transmural zone with sporadic hypointense spots was observed at the anterior and lateral wall on DE-MRI (Fig 2A).”

12. Line 4, page 11, Discussion.
Add edema to the components of myocardial infarction.
The main findings of the study should be described in the first paragraph in
discussion, which will make it easy to understand the intension.

14. Legend of figure 4 and 5.
Acute phase, early chronic phase, and chronic phase were not defined. For
avoiding misunderstanding, these should be replaced with 48 hours, 2 weeks,
and 2 months after the onset of myocardial infarction, respectively.

15. Table 1.
“True-FISP” is an abbreviation for “true fast imaging with steady-state
precession”.

16. Table 2.
Please show the data of the remaining rabbits (No. 4-10) 48 hours after
myocardial infarction.

17. References.
Refer to the following articles.
Okayama S, Uemura S, Sugimoto H, Enomoto S, Onoue K, Omori S, Soeda T,
Somekawa S, Ishigami K, Watanabe M, Nakajima T, Kubota Y, Saito Y. Dual
gradient-echo in-phase and opposed-phase magnetic resonance imaging to
evaluate lipomatous metaplasia in patients with old myocardial infarction. Magn

Okayama S, Uemura S, Watanabe M, Morikawa Y, Onoue K, Soeda T, Iwama H,
Somekawa S, Takeda Y, Uramoto H, Kobayashi Y, Saito Y. Novel application of
black-blood echo-planar imaging to the assessment of myocardial infarction.

Discretionary Revisions
1. Please compare the lipomatous metaplasia volume (%LV) between
T1-weighted imaging and histopathology, if possible.

2. Please longitudinally measure the signal intensity ratio of lipomatous
metaplasia / non-infarct area, if possible. I consider that quantitative evaluation is
better than visual evaluation.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being
published

Statistical review: No, the manuscript does not need to be seen by a
statistician.
Declaration of competing interests:

I declare that I have no competing interests.