Reviewer's report

Title: Semiquantitative Assessment of Subchondral Bone Marrow Lesions of the Knee at 3T MRI: A Comparison between Intermediate-Weighted Fat-Suppressed Spin Echo and Double Echo Steady State Sequences

Version: 1 Date: 13 July 2011

Reviewer: Michel D. D Crema

Reviewer's report:

The authors presented a study aimed in comparing two different MR techniques (fast spin echo (FSE) vs. gradient recalled echo (GRE)) regarding assessment of non-cystic and cystic BMLs in OA. This a well-written and well-discussed manuscript. Also, it is extremely relevant in OA research since several works published recently used GRE MR sequences to assess non-cystic BMLs. Most MSK radiologists and physicists agree that gradient-echo sequences are insensitive to bone marrow pathology, especially regarding the "edema" pattern.

I have minor suggestions for your consideration:

1- In the second paragraph of background: the sentence "non-cystic BMLs may also exhibit cystic components" may be confusing for a general reader. Please rephrase.

2- Background: the terms used for the MR sequences regarding the head-to-head comparison are not wrong, but may add confusion. The main purpose of this study is not really to compare a "fluid-sensitive" sequence with a "cartilage-dedicated" sequence, but rather to compare a "FSE" sequence with a "GRE" sequence, which is the real point in terms of BML assessment. Even if the terminology here is not wrong and widely accepted, it may lead to confusion since we may have a GRE fluid-sensitive sequence (if the fluid is bright and the fat is suppressed), as well as a FSE cartilage-dedicated sequence (like the new 3D FSE sequences such as in "Cube"). The terminology for comparison should be focused on FSE vs GRE everywhere in the text.

3- In the last paragraph of background: the sentence "lesions were compared according to lesion conspicuity, lesion size and differentiation between cystic and non-cystic part of BML" may be deleted since it is well explained in the methods section.

4- Please make it clear in the methods section that this is a cross-sectional study. A reader may realize it only when reading the limitations in the discussion section (where the authors stated they were unable to comment on longitudinal sensitivity).

5- Did the authors exclude knees presenting with BMLs of other origin (traumatic, vascular, other)? If yes please add such statement and how many knees were
excluded. If no knees were excluded for that reason, just add a brief statement saying no BMLs of other origin (than degenerative) were found in this study.

Level of interest: An article of outstanding merit and interest in its field

Quality of written English: Acceptable

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