Reviewer's report

Title: A cross-platform software tool for the generation of relaxation time maps in magnetic resonance imaging

Version: 1 Date: 29 April 2010

Reviewer: Vincenzo Positano

Reviewer's report:

The authors present a open-source software for T1-T2-T2* mapping. I greatly appreciate the fact that a research software is made available to the scientific community for free. There is the definitive need of open software tool that can be used and customized for scientific research.

The software include well known algorithms for curve fitting that are definitively not new, so the added value is the choice of the open-source distribution.

Major Compulsory Revisions

I have tried the software and there are some points that should be improved, for instance the software seems to not handle multi-slice multiecho images as the one that are used for assessment of global and regional iron overload in heart by T2* measurement. The possibility to define a sub-region for T2* mapping to reduce the computation time may be also very useful.

Minor Essential Revisions

Abstract:
Line 1: T1, T2, and T2* relaxation times....

The first two sentences in Results section seems to lead more to a Materials and Methods section that should be added.

Background:

Last sentence: The distinction between MOLLI and other “standard” mapping schemes seems to be not fully justified. There are a lot of T2/T2* mapping sequences in cardiac application that allow to acquire T2/T2* maps in a single breath-hold by ECG triggering.

Implementation

The second point in basic specification it is not clear. It means that maps should be exported as secondary capture DICOM? What is a “standard MR software”? Maybe the list should follow the image analysis workflow (1-6-3-4-5-6-7-2-8).

Page 6:
How is defined limitT1? Why a 0.67 factor is used?

Eq [3]. In study of severe iron overload by T2 or T2* mapping, the baseline noise
cannot be neglected and the decay shape is not pure exponential. The two possible solution are the truncation of the curve (as in ref 7) or the use of a different decay model \( y = A \exp(-TE/T2) + B \) where \( B \) is a constant that take into account the baseline noise (Ghugre N, JMRI 2006, Positano V MRI 2009, etc). The software should handle these needs to be useful in patients with severe iron overload.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**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