Reviewer’s report

Title: Validity of a computer-assisted manual segmentation software to quantify wrist erosion volume using computed tomography scans in rheumatoid arthritis

Version: 1 Date: 5 May 2013

Reviewer: Fernando Martins

Reviewer’s report:

First of all, I must congratulate all authors for this manuscript. Question is well defined, and methods and limitations are well described. Both abstract, discussion and conclusions are adequately written. The title also correctly describes your investigation. I hope that my comments below are somehow useful.

Major Compulsory Revisions

1. You wrote:
   • CT images were read by two rheumatologists (FS and AA) over four days by using a large screen (27-inch) radiologic workstation monitor.
   • Mann-Whitney-U-Test was used to investigate significant differences between observers.

   From the first sentence, I understood that both FS and AA analyzed all CT images. If this is true, Mann-Whitney-U-Test cannot be used to investigate significant differences between the two observers. This test is used for independent samples, so it can only be used if you formed two groups of patients and each group was read by a single person.

   If both observers analyzed all CT images, you are dealing with paired samples and the correct test for this analysis it would be the Wilcoxon Signed-Ranks Test.

Minor Essential Revisions

2. In Figure 4, descriptions of gray and black bars are missing.

Discretionary Revisions

3. As you clearly state, CT scanning has some disadvantages and can’t be widely used for detection of bone erosions. The most significant result seems to be “the poor correlation observed between the total Sharp / van der Heijde erosion score and the total erosion volume measurement on CT”. Since CT scanning is for sure more accurate than the observation of 2D images, this result can compromise the validity of the total Sharp / van der Heijde erosion score. Perhaps this result should be highlighted.
4. It would be interesting to use other DICOM viewers and compare the results. Otherwise, these results can be dependent on a specific computer program.

Kind regards.

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

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests.