Reviewer’s report

Title: Dynamic contrast enhanced Magnetic Resonance Imaging in chronic Achilles tendinosis

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Reviewer: Roland Syha

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The submitted manuscript deals with dynamic contrast enhanced MRI in Achilles tendinosis. Evaluation of intratendinous and paratendinous signal alterations is of high interest in especial regarding therapeutic monitoring. In order to detect even small changes in tendon texture quantitative assessment can be a useful tool. The described method is one possibility of assessing tendinopathy. Previous studies showed that DEMRI could be a potential technique.

Major Compulsory Revisions

1. Material and Method:
   Patients: Concerning the previously published patient material the authors should point out in more detail whether data published in this study is concordant to the previous publication (e.g. are the evaluated pain/performance values identical to the data of the mentioned previous study?).

2. Evaluation of Dynamic MRI: “the most centred one was chosen”??? How did the authors reach that measurement in the follow-up examination was in the same location compared to baseline assessment. If not, how does a change of location influence the reliability of measurement? Is data available concerning reproducibility of measurement? Why did the authors choose a ROI of 5mm in the fat ventrally of the tendon compared to a ROI of 2 mm in the other regions?

Minor Essential Revisions

1. Introduction: One previous study concerning DEMRI is missing and should be added to introduction as well as discussion (Richards PJ et al, Longitudinal microvascularity in Achilles tendinopathy (power Doppler ultrasound, magnetic resonance imaging time-intensity curves and the Victorian Institute of Sport Assessment-Achilles questionnaire): a pilot study., Skeletal Radiol. 2010 Jun;39(6):509-21).

2. Material and Method:
   Patient: Inclusion and exclusion criteria should be pointed out in more detail (e.g. what was the source of tendon pathology in those who were not mentioned as sports related? Did the authors exclude patients with systemic diseases or conditions which might influence tendinous tissue, e.g. gout, rheumatic diseases, drug intake…?). What did the authors mean by “technical problems” in detail? Concerning the practiced sport the study group is very heterogeneous. This should be mentioned in the limitations section of the discussion.
3. Treatment: Did the patients perform the exercises with or without supervision? Please state on this! Why did the authors choose the questionnaire of Curwin and Stanish. The used questionnaire should be compared to other established questionnaires (e.g. VISA-A). Advantages and disadvantages as well as limitations should be pointed out in the discussion.

4. MRI acquisition: Figure 1 shows a T1 weighted image without fat suppression. Did the authors use a fat suppressing technique for image acquisition? If not, could it be useful to apply a fat suppression?

5. Discussion: The obtained results should be compared to other imaging approaches (e.g. Mailliares P et al, Achilles and patellar tendinopathy loading programmes: a systematic review comparing clinical outcomes and identifying potential mechanisms for effectiveness, Sports Med. 2013 Apr;43(4):267-86)). Concerning DEMRI the study mentioned above (Richards et al) should be included.

6. The conclusion is quite short and not very informative. What are consequences for the future? What are possible next steps?

7. Figure: Patient gender and age as well as clinical setting should be mentioned. Image type (T1 weighted without fat suppression) as well as sequence type should be added.

Discretionary Revisions

1. Introduction: The pathologic background is described shortly, but adequate. Maybe different imaging approaches to tendinosis should be explained in more detail and advantage/disadvantages should be pointed out (ultrasound, non-enhanced, contrast enhanced MRI). Furthermore new approaches in MRI (UTE) could be mentioned at the end of the first section as they underline the theory of change of intratendinous water content.

2. Was a post-processing of MR images concerning motion artifacts performed? For quantification of vascularity signal intensity and area under the curve were chosen as surrogate parameters. Other common used parameters are blood flow, blood volume or k-trans for assessment of permeability. The authors should point out the advantages and disadvantages of the different parameters in the discussion.

3. Furthermore the usefulness of application of i.v. contrast medium is not really underlined by this study. Maybe a comparison to other parameters (non-enhanced MR images, Diameter, Volume) could be helpful to highlight the additional information gained by the use of i.v. contrast medium.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.
Declaration of competing interests:

I declare that I have no competing interests.