Author's response to reviews

Title: Comparison of 1.5T and 3T MRI scanners in evaluation of acute bone stress in the foot

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Comparison of 1.5T and 3T MRI scanners in evaluation of acute bone stress in the foot

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Response to reviewers

The authors would like to thank Dr. Ranson for the constructive comments concerning our manuscript now titled “Comparison of 1.5T and 3T MRI scanners in evaluation of acute bone stress in the foot” The manuscript has now been revised according to the suggestions made by Dr. Ranson and a point-to-point response is included at the end of this cover letter.

Yours truly,

Markus Sormaala, MD, PhD
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Abstract, Background & Methods

Craig Ranson suggested several minor grammatical and typographical improvements.

All the suggested changes were made and are visible with track changes.

Results

Craig Ranson suggested several minor grammatical and typographical improvements.
Craig Ranson commented: This statistic doesn't really make sense as it is not possible for radiographs to be sensitive to non-fracture acute bone stress changes such as marrow edema. You probably should only report a comparison between radiograph and MRI identification of fracture lines (12 using x-rays, 13 using MRI) and then compared edema identification using 1.5 or 3T MRI.

The suggested changes were made and the sentence now stands:

“Twelve bone stress injuries with fracture lines were visible on plain radiographs. The sensitivity of plain radiographs was thus 92% (95% CI: 65-100%) and positive predictive value 100% (95% CI: 76-100%) compared with 3T scanner in detecting bone stress injuries with fracture lines.”

Discussion

Craig Ranson suggested several minor grammatical & typographical improvements and re-wordings.

All the suggested changes were made and are visible with track changes.

Craig Ranson commented: That is true but the reverse could also be said i.e. that 1.5T has comparable specificity (rather than sensitivity?) to 3T scanning, is more readily available and machines are cheaper?

The words “at least” were omitted from the sentence in order for it not to portray 3T as better in edema detection.

Craig Ranson commented: As do the 1.5T images. You should take care not to sound as though you are biasing 3T imaging when there does not appear to be a significant diagnostic advantage.

The sentence was changed in order for it not to portray 3T as better in edema detection: “Both 3T and 1.5T images provide the clinician with a good estimate of the extent of acute bone stress changes in the foot.”

Craig Ranson commented: Remove this sentence as repeated from above.

The sentence: “The 3T STIR images can be considered at least as sensitive as the 1.5 T images in detecting the edema.” Was omitted as suggested.

Craig Ranson commented: This would not appear to be a valid conclusion. The pictures might have been ‘prettier’ but the changes were still visible on 1.5T.

Dr Ranson is correct. The word “visualization” was replaced by the word “characterization” and the sentence should now be a valid conclusion of the study.

Craig Ranson commented: This last sentence seems out of place. You need a short final paragraph saying that although all participants in the study were
symptomatic due to their acute stress fractures, it remains unclear as to the importance and natural history of the many incidences of non-fracture acute bone stress changes observed in this sample of a high risk population. Prospective MRI studies of initially asymptomatic army recruits may provide valuable insights in the development, prevention and management of bone stress injuries in exercising populations.

A new paragraph was inserted which stands:

“Although all participants in our study were symptomatic due to their acute stress fractures, it remains unclear as to the importance and natural history of the many incidences of non-fracture acute bone stress changes observed in this sample of a high risk population. These acute bone stress changes were used in the study only as a model of bone marrow edema. Prospective MRI studies of initially asymptomatic army recruits may provide valuable insights in the development, prevention and management of bone stress injuries in exercising populations.”

Conclusions

Craig Ranson suggested minor re-wordings.

The suggested change was made and is visible with track changes.