Reviewer's report

Title: Assessment of foot and ankle muscle strength using hand held dynamometry in patients with established rheumatoid arthritis: a case-control study

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Reviewer: Ruth Barn

Reviewer's report:

This study tackles an area with minimal available literature in this patient group and will be of interest and relevance to the readership of the Journal of Foot and Ankle Research. However, there are some methodological challenges which were not addressed in the discussion and limit the interpretation of the results.

Major essential revisions

1. The major limitation of this work is the failure to take cognisance of the methodological challenges and potential implications for results. The paragraph of the discussion pertaining to the study limitations failed to highlight some key limitations of this work, for example: there is no discussion of the potential impact of disease activity (aside from controlling for those not in a self-reported flare this was not mentioned); nor is there any discussion of the impact of joint pain/swelling/tenderness (which was not recorded). In addition, these are patients with established disease and therefore likely to have foot deformity, there was no discussion of the difficulty of applying hand held dynamometry (HHD) in the presence of foot deformity. Furthermore, the challenges of undertaking maximal voluntary muscle contractions in the foot (particularly in the frontal plane) including factors such as variations in operator technique/participant effort were not considered. The discussion must be amended to address these limitations more fully.

2. The interpretation of the results in para 3 of the discussion cannot be supported by the data presented i.e to state that ‘RA disease affects muscle strength equally and rehabilitation should incorporate equal activation of both muscle groups’ is speculative and results from a misinterpretation of the results. The results are likely to be affected by the limitations raised in point 1 and this must influence the interpretation of results. For example, the difference in plantarflexion/dorsiflexion ratios may in fact be as a result of MTP joint synovitis or pain/tenderness which will inhibit ability to generate force.

Minor essential revisions

Background

1. Reference 2 is incorrect, the figures presented (16-90% of patients) are not from the source cited. Also, there are more recent papers on the prevalence of foot problems which could be cited in preference to the 1994 reference.
2. Para 2, 4th sentence, remove the word ‘significant’, the aim was to evaluate differences, significance not known until post experiment

Methods

3. ‘Instrumentation’ 2nd sentence. Re-phrase the definition of dynamometer – it will measure force not maximal voluntary contraction. Also, needs to be clarity regarding the type of muscle contraction – isometric? Was this using the ‘make test’ or ‘break test’?

4. ‘Procedure’ 3rd sentence – the measurement of inversion distal to the 1st metatarsal head – is this written correctly? Did you mean proximal? If distal the HHD would be applying resistance to the hallux which is incorrect.

5. ‘Procedure’ – penultimate sentence re. 10s recovery - is this a typo? Should it be 60s? I would suggest that a 10s rest period between each contraction is inadequate in terms of fatigue and capacity to generate maximal force.

6. ‘Data analysis’ – penultimate sentence of this para needs to be re-written. I assume the Kruskal-Wallis test was used to compare the difference between the ratios of the groups not to calculate the ratios?

Results

7. Total of 34 participants – was this equally split between the patients/controls? Please clarify.

8. 5th sentence – remove the word ‘both’ as 3 results are listed.

9. Table 1 – CRP was recorded according to methods but not presented?

10. Table 2 – requires table footer to denote the results are mean from 3 repetitions, all abbreviations need to be clarified e.g N, SD, also needs to be clear which test the p-value was derived from – my understanding is different tests for movements and ratios. Same applies to Table 1 re abbreviations and clarify p-value from which test.

Minor discretionary revisions

Background

1. Definition of RA could be modified to remove the term ‘lifelong’ for 2 reasons: 1. current treatment paradigms aim to achieve disease remission and 2. this definition does not include palindromic RA

Methods

2. Participants - were lower limb amputation and diabetes the only exclusion criteria? What about other conditions with an impact on the lower limb?

3. No mention of occupation in discussion or results so this could be removed from the methods section.

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 have no competing interests.