Reviewer’s report

Title: Clinically-evident tophi are associated with reduced muscle force in the foot and ankle in people with gout: a cross-sectional study

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Reviewer: Scott Telfer

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This study compared muscle strength in individuals with gout and tophi detected by palpation to those with gout and no tophi. The authors used a mixed effects model to determine if there was a difference in muscle strength for ankle movements, while controlling for age, disease duration, and recent pain. The paper is generally well written and is publishable if a few points can be addressed.

My primary concern relates to the measurement and interpretation of pain in this study. Firstly, more detail is required regarding the assessment of pain. The MFPDI asks about the previous month, what time period did the VAS pain question refer to? This is relevant as over the duration of the disease differences in longer term pain levels and flares could play an important role in the associations found. To be clear, I don't think that you can rule out different pain levels earlier in the disease duration leading to altered activity physical activity patterns that lead to the reduced muscle forces that remain evident at the time of assessment. I would recommend qualifying the conclusions by stating that current pain levels were accounted for in the model. Also, a global VAS of pain was also mentioned in the methods but I didn't see the results of this reported?

Abstract - "Tophi at the Achilles tendon associate with force deficits, which may contribute to reduced muscular activation and consequent disuse muscle atrophy". I'm not sure I follow this reasoning? It seems circular in at least one respect.

Methods - Was the muscle force analysed the maximum during each individual 3-5 second contraction or mean across this period?

Discussion - A further limitation is that there was no measure (subjective or objective) of physical activity levels included in the analysis. This could play a confounding role in the analysis, although again you expect it to correlate at least somewhat with pain levels.

Table 2 - The p-values reported here are different to those in the text of the manuscript? And some are also different again to those in the abstract?

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