Author’s response to reviews

Title: A radiological severity scale to measure the impact of Charcot’s Neuroarthropathy: an observational study.

Authors:

Shan Bergin (S.bergin@latrobe.edu.au;shan.bergin@monash.edu)

Parm Naidoo (parm.naidoo@gmail.com)

Cylie. Williams (cylie.williams@monash.edu)

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Author’s response to reviews:

Professor Keith Rome
The Editor
Journal of Foot and Ankle Research

14/01/2020

Dear Professor Rome,

RE: JFAR-D-19-00176 – ‘A radiological severity scale to measure the impact of Charcot’s Neuroarthropathy: an observational study’.

Thank you for the opportunity to present this paper, complete with minor revisions, for possible publication in the Journal of Foot and Ankle Research (JFAR). We would also like to thank the reviewers for their suggestions, that we feel have only improved our paper.

Please see below a comprehensive response to reviewer feedback. We have also submitted a revised manuscript via the JFAR portal with changes highlighted in yellow for easy identification. Please don’t hesitate to contact me if anything requires further clarification.

Kind Regards,

Shan Bergin

On behalf of;

Shan Bergin, Cylie Williams and Parm Naidoo
Response to reviewers: JFAR-D-19-00176 – A radiological severity scale to measure the impact of Charcot’s Neuroarthropathy: an observational study.

REVIEWER 1

1. “…I wonder if 'Charcot foot,' rather than 'Charcot's,' may be a more readily recognised term among the international readership of this journal?”

   The authors agree with this suggestion and have amended the manuscript as required.

2. “…I feel you could situate this a little more within the literature and current clinical practice. For example, you describe the Eichenholtz system (please review spelling on p. 6, line 19) without describing the modified version, inclusive of the incipient Stage 0 foot.”

   The spelling of ‘Eichenholtz’ has been amended (page 6, line 19). The following paragraph has been added to the manuscript describing the stages of the Eichenholtz Classification System, including Stage 0, which the authors agree is important. An additional reference has also been added.

   “The first and most widely recognised is the Eichenholtz Classification System that initially presented as a 3 point scale used to describe what is occurring physiologically, but was later modified to include a fourth stage [9]. Stage 0 indicates the presence of oedema with normal radiological images. Stages 1-3 refer to the progression through acute, sub-acute and chronic phases.”

3. “The Delphi method employed seems entirely suitable, however, I would like to see further description of the expertise of the panel, particularly their years in specialist practice.”

   “Additionally, it would be helpful to know the questions asked throughout the Delphi process and I wonder if these could be included as a Table or Appendix?”

   Additional information (see below) has been added to the manuscript expanding on the experience of the members of the Delphi panel. Given the size of the Podiatry profession is small the authors feel that any additional information would be potentially identifiable to those also working in the field.
“Each panel member held senior clinical positions within their respective organisations and had more than 10 years experience with this patient cohort.

The basis for the questions asked of the Delphi panel are described in the text (see below) and the authors prefer to leave as is as opposed to inserting the questions into an additional table. We hope this is acceptable.

“Delphi panel members were asked to list radiographic indicators of Charcot foot on plain film and MRI, potential importance weighting of indicators, plain film clinical features affecting foot function, commonly used radiological techniques for diagnosing Charcot foot, opinion on quantification of damage with Charcot foot.”

4. I was a little confused by the reported study population figures. Could you please revise the statement on p. 8, line 41 '23 feet (25 participants)' which is clarified later in your article.

The population description at page 8, line 41 has been amended to “24 feet (22 participants)” and is now consistent with the later description. Thank you for picking up this error.

5. Finally, on p. 13, line 34, you refer to Figure 3 which I could not find.

Figure 3 has been uploaded, apologies for this omission.

REVIEWER 2

1. The introduction is concise, but given the research is based on interpretation of radiographs, wonder if a little more detail of the bony changes, (such as fragmentation of bone, dislocation and subluxation, bony shape changes etc,) could be included.

Thank you for this suggestion, additional information (see below) has been inserted into the manuscript.

“This in turn acts as a pre cursor to bone fracture or fragmentation, and joint subluxation or dislocation that often goes unheeded until such time as a major deformity is evident. During this process, bone shape commonly changes in the midfoot.”

2. Page 11 lines 22-27 state that the three podiatrists had recognised expertise in diagnosis and/or management of Charcot, and this is contradictory to what is stated in page 9 lines 44-51 in which Rater 3 has 20 years of clinical experience utilising plain filling during the treatment of general podiatry patients (excluding patients with Charcot), and is referred to as a novice. I think this needs to be a minor revision.
The three Podiatrists with ‘recognised expertise’ were not part of the research team and formed part of the Delphi panel used to identify appropriate items for the severity scale. Apart from the Delphi Panel these three ‘expert Podiatrists’ took no further part in this study. The ‘raters’ used to evaluate the validity of the scale were comprised of the three researchers (two Podiatrists and an Interventional Radiologist) and so were not the same Podiatrists from the Delphi phase of the study. This has been clarified in the paper to ensure this is clear to readers.

We have also provided more clarity in the manuscript to define the two separate stages where one was the development of the scale through the Delphi process, the second stage being scale validation.

3. The second point of note relates to page 12 lines 29-54, where one person was removed from the study because of disparity between the novice rater's scores and the experienced podiatrist and radiologist scores, and this notably skews Cronbach's alpha. Surely the point of testing intra and inter rater reliability is to look at the whole overview, including the results that don't suit the outcomes.

We understand the concern with removal of one rater and subsequent change in alpha. During analysis, we received statistical advice on this method, as we firstly had a limited population to work with, it was one poorly performing item and removal of another item had no such impact. We have added additional limitations to ensure the reader understands this cautious approach.

4. Notwithstanding, the discussion is very balanced and recognises the complexities and shortfalls within the study; it doesn't make any unreasonable claims and the statement that the tool shows promise for future research, despite a number of key limitations, is entirely accurate and appropriate in the context of this study, and would do well to be part of a concluding statement.

Thank you, we have separated the discussion and conclusion and thank the reviewer for their time in making these suggeste