Author's response to reviews

Title: Recovery of brachial plexus lesions resulting from heavy backpack use: A follow-up case series

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Author's response to reviews: see over
Dear Miss Judith Gorton / Dr Dominik Irnich

Thank you for your positive comments on our manuscript titled” Recovery of brachial plexus lesions resulting from heavy backpack use: A follow-up case series and the opportunity to revise the manuscript.

We thank the reviewers for their constructive criticism and comments. We have revised the manuscript to address each of their comments. Our point-by-point responses are listed below (in *italics*) in the same order as the suggestions given by the reviewers.

I confirm that all authors have seen and agreed with the changes made in the manuscript.

We look forward to hearing from you soon.

Sincerely,

Jyrki Mäkelä
Reviewer's report
Title: Recovery of brachial plexus lesions resulting from heavy backpack use: A follow-up case series
Version: 2 Date: 3 December 2010
Reviewer: Eva M Andersson

Reviewer's report:
COMMENTS (divided into categories below)
The article deals with the recovery pattern of backpack palsy. The time line is not clear: what is the baseline time for each person, what is the follow-up time for each person? As I understand, register data (conscripts, Centre for military medicine) are used to identify all those persons (among all prospective soldiers or among those doing service?) who suffered from brachial plexus compression and lesions of nerves (section Participants). It is not clear whether the examination leading to the diagnosis BPP was done at the time of enrolment or during ongoing military service, but I am assuming the latter. In that case, it would be all those seeking medical care during military service. In total 55 patients with BPP were treated 1998-2004.

The follow-up time started at the time of the diagnosis during ongoing military service and ended at the follow-up examination. We have now clarified this issue (Abstract, Materials and methods para #2 and #3). Register data were used to identify persons with BPP. In Finland, patients with known HNPP are released from military service (p. 10).

I assume that “baseline” refers to the date of diagnosis, so that at the time the BPP diagnosis was set, the patients were instructed regarding proper hand use and exercises (section Intervention).

Correct. We have altered the sentence and now state "at the symptom onset" (Materials and methods para #2)

At baseline, the patients underwent a physical examination and EMG (section Interventions)). I assume that the follow-up-time was not always e.g. “one year after end of military service”, since a median follow-up time is mentioned (section Intervention).

We have clarified this in Materials and methods para #3 (Follow-up as suggested. The median follow-time was 4.5 years (range, 2 - 8 years), and 38 of the 44 patients participated in the follow-up.

At follow-up, the patients filled in a questionnaire (which is the basis for exposure assessment), and underwent clinical neurological assessment, physiotherapeutic muscle test, EMG and genomic DNA. Six patients completed the questionnaire but not the clinical tests and the blood samples.

Correct. Exposure assessment questionnaire was filled at the follow-up (now clarified in paragraph "Tests")

Outcome variables: symptoms at follow-up, muscle strength at follow-up, length of recovery period, level of physical activity at follow-up. As I understand from Recovery, 30 out of 38 reported to be symptomfree at the follow-up. Did the authors consider analyzing “length of recovery period” using survival analysis, e.g. Kaplan-Meier?
Since only the load carried was statistically significant and the p-values of the other possible risk factors were so far away from significance, we decided not to use survival analysis. In addition, although our sample is the largest ever reported, it still is relatively small in order to conduct survival analysis.

EMG was available both at baseline and at follow-up: matched data from time of onset and time of follow-up (which for some was after recovery). Is this the same as “electrodiagnostic findings” mentioned in section Tests? Was there a significant difference in the EMG results at baseline compared to follow-up so that an improvement could be verified?

We have now edited the sentence which previously started with "electrodiagnostic findings" as suggested (p.7, para 1). Since we did not find significant association between EMG and clinical findings or self-reported symptoms, statistical significance in EMG between the baseline and the final follow-up was not reported.

The exposure assessment (weight carried) was, in some cases, made more than 4.5 years later than end of service – how reliable is it?

The method of the estimation of the carried load is now specified in more detail for the readers to evaluate its reliability. This estimate was correlated with objective findings in physiotherapeutic testing, not with subjective symptoms.

Table 1: I assume that all reported values in the table refer to the follow-up time. Please clarify this in the table caption.

We have edited the table caption as suggested.

*P-values for five tests are reported: for difference in weight of the load, for difference in distribution of affected nerves, for difference in distribution of most affected nerve, for difference in weight of the load and for difference in BMI. Please provide a footnote with which test is used. Regarding the tests of difference in weight of the load (normal/abnormal and symptoms/no symptoms) and test of difference in BMI (symptoms/no symptoms), the authors have checked for “skewness in data”. It is nearly impossible to judge the skewness from 8 or 5 observations. In with such small groups I would recommend to always use a non-parametric test, instead of a t-test. In the table a p-value of 0.267 is reported for BMI, whereas in the Result section a p-value of 0.395 is reported. Why?

We have now provided a footnote indicating the tests used. Non-parametric test have now been used (Table 1). The p-value for BMI has been changed and corrected.

*At follow-up (which could be between x and y years from the end of military service?), 79% reported no symptoms, etc. Please provide confidence intervals for these proportions.

Provided as suggested (Results, p. 8 para 2).

*It would have been more reasonable to compare the distribution of affected nerves between “normal” (65%, 23%, 12%) and “abnormal” (67%, 33%, 0%). With one of the groups being so small (6 persons)
the chi-square test is not appropriate. A Fishers exact test for RxC tables is available e.g. in SAS, using

*We have now used Fisher's exact test (Table 1).*

*Those who had normal muscle strength at follow-up (26 persons) were compared to those with
abnormal strength (6 persons) with regard to the distribution of affected nerves. Should each person’s
baseline value (number of affected nerves) be taken into account when comparing the groups?

*The number of affected nerves in the Table 1 is the baseline number (now edited).*

Again, chi-square might be inappropriate with the abnormal group being so small.

*We have now used Fisher's exact test (Table 1).*

MINOR ESSENTIAL REVISIONS

It is not clear whether the examination leading to the diagnosis BPP was done at the time of enrolment
or during ongoing military service Please clarify when follow-up was, in relation to end of military
service

*The diagnosis was done during ongoing military service We have now altered the paragraph (new
paragraph “follow-up” in Materials and Methods)*

Is EMG the same as “electrodiagnostic findings” mentioned in section Tests?

*Yes. This has now been explained more thoroughly (p.7 para 1).*

The exposure assessment (weight carried) was, in some cases, made more than 4.5 years later than end
of service – how reliable is it?

*The method of the estimation of the carried load is now specified in more detail for the readers to
evaluate its reliability. This estimate was correlated with objective findings in physiotherapeutic
testing, not with subjective symptoms.*

It is nearly impossible to judge the skewness from 8 or 5 observations. In with such small groups I
would recommend to always use a non-parametric test, instead of a t-test.

*Non-parametric tests have now been used (Table 1).*

In Table 1 a p-value of 0.267 is reported for BMI, whereas in the Result section a p-value of 0.395 is
reported. Why?

*This typo has now been corrected (Results).*

At follow-up 79% reported no symptoms, etc. Please provide confidence intervals for these
proportions.
Provided as suggested (Results, p. 8 para 2).

With one of the groups being so small (6 persons with abnormal strength) the chi-square test is not appropriate. A Fishers exact test for RxC tables is available e.g. in SAS, using the algorithm of Mehta and Patel (1983), Journal of the American Statistical Association, 78, 427 - 434.

We have now used Fisher's exact test (Table 1).

DISCRETIONARY REVISIONS
Did the authors consider analyzing “length of recovery period” using survival analysis, e.g. Kaplan-Meier?

Since only the load carried was statistically significant and the p-values of the other possible risk factors were so far away from significance, we decided not to use survival analysis.

I assume that all reported values in Table 1 refer to the follow-up time. Please clarify this in the table caption.

We have edited the title caption of the Table as suggested.

Those who had normal muscle strength at follow-up (26 persons) were compared to those with abnormal strength (6 persons) with regard to the distribution of affected nerves. Should each person’s baseline value (number of affected nerves) be taken into account when comparing the groups?

The number of affected nerves in the table is the baseline number (now edited).