Reviewer’s report

Title: Reliability of clinical tests to evaluate conduction loss and increased mechanosensitivity of the peripheral nervous system

Version: 1 Date: 17 October 2008

Reviewer: Jørgen Riis Jepsen

Reviewer’s report:

I was pleased to have the opportunity to review the study on reliability of clinical tests for the function and mechanosensitivity of the peripheral nerves.

The question posed by the authors has been well defined and the applied methods appear appropriate. I would, however, suggest a more detailed description of the methods. This is dealt with below as Minor Essential Revisions.

The data are sound and the manuscript adheres to relevant standards for reporting and data deposition.

Basically, the discussion and conclusions are well balanced and adequately supported by the data. However, I would suggest a clearer statement of the limitations of the work. This is also dealt with below as Minor Essential Revisions.

The authors have acknowledged work upon which they are building.

I have some semantic problems about the manuscript title and also the abstract, which, however, accurately convey what, has been found.

It is my impression that the English writing is fully acceptable.

Major Compulsory Revisions.
None

Minor Essential Revisions.
1. One semantic issue demands a revision: In the title and also in the Abstract (Background/Methods/Results/Conclusions sections) and also in the main manuscript the bedside neurological examination seems to be regarded as reflecting conduction loss. To me the term conduction loss is an electrophysiological finding which may or may not reflect the outcome of the neurological examination. I would suggest the authors to change the title to: “Reliability of clinical assessment of the function and mechanosensitivity of peripheral nerves”. Elsewhere in the text, I would suggest the term “nerve conduction” to be replaced by “nerve function”.

2. In the Background section of the manuscript it is said that a bedside neurological examination screens for conduction loss. Again I would be cautious in using this term because it is well known that a number of nerve entrapments such as of the posterior interosseous nerve may well manifest with pareses (e.g.
of the extensor carpi ulnaris muscle) but still with a completely normal electrophysiological examination and no evidence of conduction loss. I think it is somewhat arbitrary to make a distinction between “frank” nerve lesions and other nerve lesions. The truth is that nerve lesions may manifest themselves with physical findings with or without electrophysiological findings, and that electrophysiological findings may even be confusing when they show abnormalities in subjects without symptoms. I agree in the idea of distinguishing between a) findings from the bedside neurological examination which the aims to identify abnormal efferent and afferent function and b) nerve pressure or provocation reflecting mechanosensitivity. However, why not describe the difference between the two by using the terms efferent and afferent function in case of the former? If the authors agree in my thoughts, I would suggest that the authors rewrite the first section in Background.

3. In the section on bedside neurological examination I have noted that the MMT aims to reflect a number of myotomes and that the testing methods by Kendall and McCreary are applied. Instead of describing the movement, e.g. shoulder abduction or elbow flexion, I would suggest that the authors state which muscles are tested according to Kendall and McCreary. In this way it would be possible to reproduce the study, because Kendall and McCreary describe methods for testing individual muscles – not movements. (The frequent tendency to study movements may be due to the fact that muscle function can rarely be studied in an individual muscle in isolation. However, by placing the limb carefully and really controlling the test, this is no major problem for most muscles. Studying individual muscle function has the advantage that one can better approach peripheral nerve lesions from combining knowledge with regard to the innervation pattern with the outcome of muscle testing.)

4. For sensory testing, I would appreciate information as to which nerve innervation territories and/or which dermatomes were tested.

5. For nerve palpation, I would appreciate justification of the studied locations along the nerves, e.g. in the anatomical snuff box instead of where the superficial branch of the radial nerve penetrates the fascia somewhat more proximally.

6. In the Procedure section, it is mentioned that the examining physiotherapists are experienced and blinded to the patients’ diagnoses. a) Experience is important and to my knowledge few physiotherapists and doctors are able to perform and interpret these tests. The familiarity with the tests and rating from two hours of training is important. It should be discussed in the Discussion section if the results could be generalized to cover examinations made by others and what would be required for generalization. b) Blinding to the patients diagnoses is fine but probably of minor importance. I would question the validity of the referral diagnoses. Please note that one case is diagnosed as neurolysis of the ulnar nerve at elbow. According to exclusion criteria this case should have been excluded. Actually blinding with regard to the intensity, location and side of symptoms has been impossible due to the design of the study as each examiner recorded the current pain intensity to verify comparable pain-intensity at the start of the two testing sessions. This limitation should be dealt with in the discussion.

7. Both the tests contained in the neurological examination and the ULNT were
performed by the same examiners thus also permitting bias. E.g. one positive finding suggesting nerve affliction could potentially bias the examiner to also rate other findings as positive. This should also be dealt with in the Discussion section.

8. In the Discussion section (first three lines) the authors seem to have confidence in the referral diagnoses by stating that various musculoskeletal conditions are present. The latter may well be true, but as said above, I would regard the diagnoses by the referring physicians as of minor validity. The question may be overcome by rephrasing the sentence and inserting an extra word “referred”.

9. The Conclusion in the Abstract and the text is almost identical.

10. It is recommended that tests for neurological function and tests for mechanosensitivity should both be used in the diagnosis of peripheral nerve disorders because they are based on different underlying pathophysiological mechanisms. This recommendation is probably justified but not based on the findings. Validity issues were not studied and it remains unknown whether the combination of tests have better predictive diagnostic value.

Discretionary revisions
1. Check address of author 3.
2. Page 13, line 15: “both” to be changed to “the two”.
3. Table 1: “lateral” to be changed to “Lateral”.
4. Reference 14: “Examinatin” to be changed to “Examination”.
5. A number of references use upper-case in the titles. Should be altered.
6. A number of references use full titles of references. Should be abbreviated.
7. Appendix 1 should rather be Figure 1?
8. Appendix 2 should rather be a table?
9. Appendix 3 should also rather be a figure. The word “peripheral” should be “Peripheral”.

10. It is my impression that the neurological examination tends to be performed by physicians (however, often/mostly a very limited examination) but not by physiotherapists, and that the neurodynamic tests are performed from the few therapists with an experience and special training in manual therapy but not by the majority of physiotherapists and rarely by physicians. A major proportion of upper limb patients constitute a diagnostic challenge because the conventional physical examination is clearly insufficient. I suggest that the Discussion section deals with this. It would also be interesting to hear whether the neurological examination including assessment of nerve soreness and the neurodynamic examination was able to modify or alter the referral diagnoses of the general practitioners.

**Level of interest:** An article of importance in its field
Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.