Reviewer’s report

Title: Conduction in ulnar nerve bundles innervating proximal and distal muscles: a clinical trial.

Version: 1 Date: 12 July 2010

Reviewer: Othmar Schuhfried

Reviewer’s report:

Background

Minor essential revisions:

Paragraph 1: provide a reference here: Conduction velocity declines when fiber’s diameter decreases.

Paragraph 4: electrophysiologicly # electrophysiologically

Methods

Major compulsory revisions:

The sample size is not high (n= 30) and the gender distribution of the subjects is assymetrical (more women).

More characteristics of the patients e.g. age, height, Body Mass Index and circumference of upper and lower arm have to be provided.

Only the room temperature was controlled but not the skin temperature of the lower and upper arm. This is necessary to avoid a systematic error.

Minor essential revisions:

Paragraph 1: Thirty ceses # thirty subjects

Stimulus, Recording

A picture or sketch of the stimulation and recording sites would be helpful.

Study scheme

Major compulsory revisions:

Paragraph 1: Was the stimulation on the upper arm and the recording on each muscle performed simultaneously or was a supramaximal stimulation performed for each muscle separately?
To avoid a systematic error the supramaximal stimulation and the recording for each muscle should be performed in a random order.

How was the amplitude measured? Baseline to peak or peak to peak?
Where were the latency markers positioned? Onset of the negative deflection of the potential or to the peak?
How was the duration of a potential measured?

Results

Major compulsory revisions:

Paragraph 1: The authors mentioned that a test for normal distribution was performed, but in the results section of this paper they did not mention if the data were in fact normally distributed.

Table 1 shows that the standard deviation of the nerve conduction velocity by recording from proximal muscles is twice as large as for distal muscles. In the discussion section the authors should try to give an explanation for these results.

Possible correlation for all examined parameters (nerve conduction velocities, amplitudes and durations of CMAP) with age, BMI, height and stimulation strength should be explored.

Minor essential revisions:

Paragraph 3: at tle level # at the level

Compound muscle action potential

Major compulsory revisions:

By stimulating on the arm segment it would be of interest if the intensity strength for supramaximal stimulation is different for proximal and distal muscles.

Minor essential revisions:

Table 4: it is not necessary to present r2 . It can be calculated from r that is presented in this table.

Are the results of table 4 obtained from all 3 muscles (n is missing!). If yes, it would be better to present the correlations between the parameters for each muscle separately.

All tables do not show the number of the subjects.

Discussion

Major compulsory revisions:
The authors conclude (see discussion part of the abstract) that differences in nerve conduction parameters obtained from proximal muscles compared to distal muscle might be ancillary for detecting the level of neuropathies and motor neuron disease. But they did not provide a clinical example to support this theory. Most frequently, a focal neuropathy of the ulnar nerve can be found within the elbow region, but this region is not examined in this experiment.

What are the clinical implications of these results for an electrophysiologist? I think that the results of this study might provide no practical but more physiological informations. They might give an explanation that an incomplete nerve lesion in the upper arm is clinically more pronounced distally. In an incomplete nerve lesion thinner nerve bundles to distal muscles are more involved and more vulnerable than thicker nerve bundles to more proximal muscles.

Unfortunately the authors only examined the ulnar nerve. The information would be much more valid if they would also have examined another nerve of the upper extremity e.g. the median nerve with a comparison of recordings from proximal compared to distal muscle. The authors should discuss why they performed their study only on the ulnar nerve.

Other methodological limitations (small sample size, much more women than men) should be mentioned in the discussion by the authors and discussed in a proper way.

Minor essential revisions:
Last paragraph: …while the amplitude increases # increases

The figure does not provide additional information.

References
Check the references, e.g. reference 9 date of publication is missing.
Check the whole text for spelling errors.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Not suitable for publication unless extensively edited

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**
I declare that I have no competing interests