Reviewer's report

Title: Ultrasonographic median nerve cross-section areas measured at the 8-point marks in antidromic sensory inching test for idiopathic carpal tunnel syndrome: a correlation with severity of nerve conduction study and duration of clinical symptoms

Version: 1 Date: 13 August 2011

Reviewer: Ahmad Reza Ghasemi Esfe

Reviewer's report:

We read with interest the study by Chen et al entitled: ultrasonographic median nerve cross-section areas measured at the 8-point marks in antidromic sensory inching test for idiopathic carpal tunnel syndrome: a correlation with severity of nerve conduction study and duration of clinical symptoms.

We have the following comments:

- Major Compulsory Revisions

1- It is not clear who has performed the ultrasound? One operator or more than one. Did the same operator perform the tests, both NCT and ultrasound? Was the operator blind to the patient and control groups? Did a musculoskeletal radiologist help the authors in applying ultrasound of median nerve?

2- Because of the skill and operator dependency of ultrasound, performing ultrasound always needs some experience in this field. How many years have the performer of ultrasound had experience in the field (musculoskeletal, peripheral nerve imaging)? It’s better to mention this issue in the method section. In studies like this when the reference is clinical diagnosis of a disease, the examiners of para-clinic studies are better to be the experienced ones.

3- Also, it is not clear who has confirmed the clinical diagnosis of CTS? One or more than one clinicians? Was agreement determined between the clinicians if there were more than one?

4- The authors need to define their study groups more clearly, why did they choose a different number of controls to patients?

They did not mention age and sex matching of the control group, if they did not, why not?

5- In the ultrasound section of the methods the authors need to detail, is the transducer placed directly on the patient's skin or with the interposition of a gel pad? How many times did they measure CSA of median nerve to report the mean CSA of each level, especially for tracing method?

6- How were bifid median nerves and persistent median vessels diagnosed? Was this done prior to or during the sonographic study?

7- The diagnosis of CTS was based on clinical symptoms, did some or all
patients have other diagnostic confirmation, i.e., reduction of symptoms after surgery or positive results by other imaging techniques (MRI)?

8- Is any normality test done for the data? Why the authors have used both parametric and nonparametric statistical tests?

9- Limitations of the work are not stated. Authors should explain about limitations of the study in discussion section.

- Minor Essential Revisions

1- The results presentation and figures are well.

- Discretionary Revisions

1) The title is rather hard to read. We suggest that the authors may modify it.

2) 1-Abstract needs some modifications. One should understand the whole process of study from your abstract without referring to the main text. The abstract does not have an integrated format and should be thoroughly revised. For example in the sentence: “The median nerve CSAs were measured at the 8-point marked as i4, i3, i2, i1, w, o1, o2 and 03” the name of points are useless to mention, because not repeated in the following sections of the abstract. Or in the results section, the “cut of values” for what? Or it is not clear from the abstract why the authors have used 8 points, and what is the significance of considering several points? Also in the results section it is better to focus on your positive correlations and major novel findings of this study rather than reporting the number of subjects with different durations.

3) The conclusion of the abstract does not point to the methods used and the novel findings of this study. It is already well known that US is a useful tool for CTS diagnosis, and CSAs are associated with CTS severity.

4) Why were other ultrasound findings for carpal tunnel syndrome not recorded between CTS-hands and A-hands (abnormal hypoechogenicity, Ratio between proximal and distal parts, #CSA, etc.)?

5) The major novel findings of this study, with respect to considering 8 cut-points should be discussed with more stress and considered in the conclusion of this study. In fact after reading the article and in comparison with recent published articles it seems performing ultrasound in 8 points is rather time wasting without any superior advantages for diagnosing or confirming CTS.

14 / 8/ 2011
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Level of interest: An article of limited interest

Quality of written English: Acceptable
**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

'I and my colleague Dr khalizadeh declare that we have no competing interests'