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

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Reviewer: Einar Wilder-Smith

Reviewer’s report:

Summary
This is a prospective study comparing High resolution US CSA with the inching technique in patients with CTS and in those without.
The authors investigate the duration of CTS symptoms with CSA and NCV at multiple points across the wrist.
They conclude that CSAs have a positive correlation with the NCS severities and duration of clinical symptoms.

Comments
Major Compulsory Revisions
This is a potentially interesting study on correlating CTS with size of the median nerve at various points of the median nerve before, as it enters inside and as it exits the carpal tunnel.

1) The authors show what has been known for some time- that NCV and CSA correlate. In Visser’s comparison of NCV and US, this is clearly shown (This paper should be quoted by the authors) Visser L H et al. J Neurol Neurosurg Psychiatry 2008;79:63-67. The authors should clearly state which measurements they recommend in patients with no NCV abnormalities noted.

2) The authors need to offer an explanation towards why the NCS minimal group, does not correlate with CSA. This is particularly important since the argument of the usefulness of US in NCV negative patients depends on this!

3) There is a problem with correlating CSA with NCV in that the authors fail to mention that at entrapment (around i2) the nerve should be smaller and distal (as well as proximal) the nerve should be larger. This needs to be differentiated in the discussion and in the formulation of the recommendations!

4) As the study centres on CSA, the authors need to incorporate into their discussion the reasoning why certain areas enlarge and others do not.

5) In the discussion the authors offer normal values for tunnel inlet and outlet but fail to define them in relation to the inching in the methods section.

6) The authors do not mention the weaknesses of the study and need to do this! For instance- The limits of accuracy in inching, variation in wrist size affecting
measurements, difficulty in accurately obtaining a chronology of the length of duration of symptoms.

examine the summation of damage in a defined section of the median nerve across the CT. Here the median nerve changes are subdivided introducing the problem that the entrapped site which should be

Minor Essential revisions

I find it hard to believe the strict clinical selection process described by the authors as in my clinical experience most patients with CTS (and indeed normal subjects!) will have a history of some neck pain history and thus a suspicion of cervical radiculopathy!

1) Unfortunately the authors did not compensate for the circumference of the wrist which is a known factor affecting the CSA and nerve conduction correlations previously done. [Usefulness of additional measurements of the median nerve with ultrasonography. Claes F, Meulstee J, Claessen-Oude Luttikhuis TT, Huygen PL, Verhagen WI. Neurol Sci. 2010 Dec;31(6):721-5.]

2) The authors may like to broaden the discussion by commenting on the finding that the sensory NCV using the nerve length measured by ultrasound is in fact slower than that using the surface distance. Arch Phys Med Rehabil. 2011 Jan;92(1):1-6. Median nerve conduction study through the carpal tunnel using segmental nerve length measured by ultrasonographic and conventional tape methods. Rha DW, Im SH, Kim SK, Chang WH, Kim KJ, Lee SC.

3) Where was skin temperature measured- before or after US measurement?

4) Sensory latencies need to be defined as peak or onset.

5) Correct the sentence at the end of the discussion: Nonetheless, US has been known b reproducible in median nerve measurements [26].

6) Figure 3 demonstrates a flattened Median Nerv at i2 within the Carpal Tunnel and there is enlargement of the median nerve both distal and proximal to it. The authors state that at the site of flattening of the nerve there is a typical prolongation of latency in the antidromic sensory nerve conduction. This contradicts there results which state that the larger the nerve the more delayed the SNAP.

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

Quality of written English: Needs some language corrections before being published

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