

**Letter to the editor: The sensitivity and specificity of  
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a meta-analysis.**

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**Letter to the Editor. The sensitivity and specificity of ultrasound for the diagnosis of carpal tunnel syndrome. A meta-analysis**

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Sir,

We read with a particular interest de meta-analysis entitled “The Sensitivity and Specificity of Ultrasound for the Diagnosis of Carpal Tunnel Syndrome” by Fowler, Gaughan and Ilyas <sup>1</sup>. It is true ultrasound has garnered interest in the last decade for diagnosis of carpal tunnel syndrome considering its low costs, noninvasiveness and short examination times, especially with the improvement of the transducers in the last five years. Therefore, a systematic review of available data and meta-analysis on validity of ultrasound for the diagnosis of carpal tunnel syndrome seemed to be particularly important. However, although the authors apparently rigorously selected papers by following PRISMA or MOOSE guidelines <sup>2,3</sup>, their meta-analysis is problematic. Actually, as the authors themselves stated in their discussion, they combined results of different threshold of cross-sectional area of median nerve, which could lead to artificial variation of sensitivity or specificity or, at the opposite, hide real variation of these parameters. We are also concerned about the reference used in the selected studies, such as the transducers used: more details are needed on what is clinical reference standard (what clinical testing used, who performed it), what is considered by authors as a positive electrodiagnostic testing, what ultrasound machine and transducers used? This is particularly important to understand the heterogeneity of the results found by authors. The authors detailed why likelihood ratio are better than sensitivity and specificity in the method section but unfortunately did not give any results about them.

In conclusion, the authors gave probably a fair review of what information about validity in diagnosis of carpal tunnel syndrome by ultrasound but their meta-analysis should be interpreted with caution, and need further work. We feel authors could be detailed more about references and materials used (including the year of publication) to study the sensitivity of change without including subgroup. Likelihood ratio would give better results than only

sensitivity and specificity. Finally, we think, even though it is probably not feasible to pool raw data by contacting authors, perform separate analyses at different thresholds are mandatory to obtain reliable accuracy for clinicians.

## References

1. Fowler JR, Gaughan JP, Ilyas AM. The Sensitivity and Specificity of Ultrasound for the Diagnosis of Carpal Tunnel Syndrome: A Meta-analysis. *Clin.Orthop.Relat Res.* 2010.
2. Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gotzsche PC, Ioannidis JP *et al.* The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *PLoS.Med.* 2009;**6**:e1000100.