Author's response to reviews

Title: Serum S100B levels measured using two laboratory methods: a comparative, observational trial.

Authors:

Sharon Einav (einv_s@szmc.org.il)
Eyal Itshayek (eyalit@md.huji.ac.il)
Jeremy D Kark (jeremy1@vms.huji.ac.il)
Haim Ovadia (ovadia@hadassah.org.il)
Carolyn F Weiniger (carolynfspencer@gmail.com)
Yigal Shoshan (shush@hadassah.org.il)

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Author's response to reviews: see over
Dear Editor,

The diagnosis of acute brain injury relies heavily on physical examination and radiology modalities that require complex patient transfers to/from radiology suites (e.g. computed tomography and magnetic resonance imaging). These limitations make such diagnoses particularly difficult in critically ill patients where concomitant sedation, and/or protracted postoperative awakening confounds the clinical picture. Commercial availability of a reliable biomarker of acute brain injury would enable critical care physicians to refine their diagnoses of brain injury.

Serum S100B is one of the most studied biomarkers of brain damage in the clinical setting. In a previous publication we demonstrated that rises in the blood concentration of this biomarker precede clinical findings, so that patients who are incapable of undergoing complex clinical neurological testing may theoretically benefit by use of this protein as a biomarker. Use of this protein remains limited for quite a few reasons, many of which are mentioned in our paper. Nevertheless, this protein is currently the only protein of which we are aware that holds promise as a marker of severe neurological disability and a predictor of low probability of survival in critically ill patients.

The current study is the first systematic examination of the relationship between serum S100B protein measurements made using a newly marketed commercial kit (theoretically a making this protein an easily available tool for the clinician) and the gold standard ELISA method.

While there are abundant publications demonstrating the relationship between S100B and devastating neurological injury (i.e. stroke, cardiopulmonary resuscitation), we were interested in comparing the measurements made using two methods in a model of moderate, controlled cerebral insult. Our results highlight the shortcomings of currently available measurement methods. This study also emphasizes the need for better definition of reference values and for international standardization of commercial kits so that the diagnostic and predictive validities of S100B can be effectively assessed in clinical practice.
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All of the authors have made substantial contributions to the manuscript and have participated sufficiently in the work to take public responsibility for appropriate portions of the content.

Thank you for considering this paper for publication for your journal.

I look forward to your response,

Sincerely,

Sharon Einav, M.D.