Author's response to reviews

Title: Clinical validation of S100B use in management of mild head injury

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

We hereby submit our manuscript “Clinical validation of S100B use in management of mild head injury” to your journal *BMC Emergency Medicine* for publication consideration.

Mild head injury (mild traumatic brain injury) is a difficult condition to manage in busy emergency departments. Different guidelines and decision rules have been published to aid clinical management but these are all based upon patient history and clinical examination. Most of these are very sensitive but lead to substantial false positives, i.e. normal CT scans. This consumes considerable resources and may put patients at unnecessary risks due to high doses of ionizing radiation from CT scans.

In the past 15 years, reports have suggested that serum levels of S100B protein may be used to safely omit approximately 1/3 of patients with minor head injury from CT scanning. Despite these reports, S100B has never been validated and the actual clinical impact is unknown.

In 2007, we introduced S100B into our existing (Scandinavian Neurotrauma Committee, SNC) head injury management guidelines based upon the available evidence at that time. Shortly thereafter, we initiated this study to follow the management of patients with these new routines. Patients were also followed up with questionnaires at 3 months and medical record examination/database search to determine the presence of significant intracranial complications (similar follow-up design as the Canadian CT Head Rule, CCHR). Considering the organisation of the Swedish health care system, this method ensures that no important complications are missed.

Our findings confirm that S100B is safe and effective in the management of this patient group in a “real-life” clinical setting, even though both over- and under-triage was noted. This is the first report to validate S100B in an actual clinical setting, despite the biomarker being used clinically in several European countries. It will lead to a nationwide introduction of S100B into clinical routine for these patients and will facilitate FDA approval of S100B in the USA.
We chose *BMC Emergency Medicine* due to the subject of the study and due to the open-access nature of your journal. We feel the results should receive widespread publication and that it may be viewed freely. We also plan to submit 2 other papers based upon this data (one paper dealing with cost analysis and another paper looking at S100B levels in relation to age and alcohol intoxication) at a later stage.

We feel that these findings are important and hope that your journal will consider them for publication.

Warm regards,

Johan Undén, MD, PhD

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