Reviewer's report

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

Version: 2 Date: 6 September 2012

Reviewer: Georgene Hergenroeder

Reviewer's report:

Discretionary Revisions

1. Is the question posed by the authors well defined? The aim of this study was to examine the clinical impact and diagnostic performance of serum S100B in actual management of mild head injury (MHI) patients.

2. Are the methods appropriate and well described? Authors carefully described inclusion criteria to include patient where the maker would be clinically relevant – patients with intermediate risk for intracranial complications where CT is recommended.

3. Are the data sound? The data appear sound.

However, please clarify in the results section it is noted that CT was performed in 44 patients (32%) when the guidelines recommend discharge, it is not clear how this corresponds to the Figure 3 data.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition? Yes

5. Are the discussion and conclusions well balanced and adequately supported by the data? yes

6. Are limitations of the work clearly stated? Please clarify, was radiologist’s reading performed prior to S100B result availability? It would have been preferable for the radiologist to be blind to S100B levels for research purposes; however in clinical care the radiologist would have access to any available labs so in terms of evaluating clinical utility of s100B the design is acceptable. Please clarify if the decision for CT to be performed based on S100B level?

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? Authors referenced key S100B work.

8. Do the title and abstract accurately convey what has been found? Yes

9. Is the writing acceptable? Yes

This is an important study for the diagnosis and management of mild brain injury patients considered at intermediate risk for intracranial complication in light of concerns of the negative health impact of radiation exposure from imaging, and necessity of managing resource utilization while providing optimal patient care. The study conducted at a level II trauma center provides useful data to clinicians to evaluate the value of S100B as a tool to assess at-risk mild head injury adult
patients. The aim of this study was to examine the clinical impact and diagnostic performance of serum S100B in actual management of mild head injury patients. S100b is a low molecular weight calcium-binding protein expressed and secreted primarily by astrocytes. It has been reported to have both neurotrophic and neuroprotective functions (Kleindienst et al 2006, 2007). S100b is released into CSF and serum after brain injury. At the time of the study mild head injury patients with low (<0.10 microgram/L) levels of S100B could be discharged without CT. The primary study outcome in this prospective cohort validation study was significant intracranial complication (positive CT, follow-up positive imaging or death due to intracranial complication). Of note, no patients with normal S100B level showed intracranial complication. Authors conclude that mild head injury adult patients, without deficit and without additional risk factors having normal S100B levels taken within 3 hours of injury are safe for hospital discharge. Interestingly, a recent pediatric study was able to show significantly higher S100B levels in children with abnormal CT, but for children with an abnormal CT and a GCS of 15 S100B did not predict the abnormal CT (Babcock et al 2012).


Babcock L, Buczkowski T, Mookerjee S, Bazarian J. Ability of S100B to predict severity and cranial CT results in children with TBI. Brain Injury, 20121-9, early online.

**Level of interest:** An article of outstanding merit and interest in its field

**Quality of written English:** Acceptable

**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.