Reviewer’s report

**Title:** Hypoglycemic Encephalopathy Mimicking Acute Ischemic Stroke in Clinical Presentation and Magnetic Resonance Imaging: A Case Report

**Version:** 3  **Date:** 31 Oct 2018

**Reviewer:** Brian Buck

**Reviewer's report:**

The manuscript is a case report of a patient with hypoglycemic encephalopathy. The report highlights the DWI MRI sequences findings and discusses the potential reason behind the reversibility of the DWI findings with correction of glucose.

Major comments:

1) In order to interpret the DWI sequences the ADC maps should be provided. It would be important if the suggestion is that there is cytotoxic edema and restricted diffusion to show that these areas of increased signal on DWI are associated with low ADC. Ideally given the neuroimaging focus of the journal a FLAIR sequence should be included. The b-value of the DWI image should be included in the figure legend.

2) The follow up MRI scan is performed at 1 month. In patients with ischemic stroke DWI imaging changes would usually disappear by this time point. (American Journal of Neuroradiology April 2001, 22 (4) 637-644). Without an earlier MRI scan is it difficult to claim that the evolution of DWI changes is different between hypoglycemia and stroke. This should be discussed as a limitation.

3) I am concerned this comment "This "excitotoxic edema" protects axons from intracellular edema and irreversible damage [2, 8, 9], and explains the reversible DWI findings of hypoglycemic encephalopathy" is speculative, not supported by the references, and possibly incorrect. To my knowledge there is no evidence directly linking the reversibility of DWI changes in hypoglycemia to a protective effect of excitotoxic edema. This statement should be presented as a hypothesis rather than fact.

For example, reference 9 states that with excitotoxic brain injury "cytotoxic edema is due to excitotoxic injury with less energy failure; this type occasionally resolves on follow-up MR imaging."

Minor comments:

1) time from symptom onset to initial MRI should be reported if available
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript

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Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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