Reviewer’s report

Title: Dexmedetomidine is neuroprotective in an in vitro model of traumatic brain injury

Version: 3 Date: 17 November 2011

Reviewer: Teneille Gofton

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Discretionary revisions: A recommended revision is to include data points following further time delay for exposure to dexmedetomidine (e.g. 8 and 24 hours). This may yield further interesting information that is relevant to the manner in which dexmedetomidine is currently used.

Other Comments:

1. There is a well defined experimental question. The methods were well-described and referenced. I am not familiar enough, however, to comment specifically on the appropriateness of the experimental model chosen. The conclusions extrapolated from the data are reasonable and the limitations are clearly discussed.

2. In this study, the tissue studied was injured in vitro rather than in vivo, which will limit the ability to extrapolate the data from the in vitro setting to an in vivo setting. However, the authors appropriately acknowledge this limitation in the discussion.

3. The data points that are likely to translate into the most clinically relevant information are the data points obtained from delayed exposure to dexmedetomidine. If possible in this experimental model, it would be beneficial to have data points after an even longer time delay since, for multiple reasons, dexmedetomidine is not frequently used as a first line sedating agent in a post-trauma setting. Thus the delay to exposure will much longer than a few hours. I agree that the protective effects of dexmedetomidine appear to have a dose response.

Level of interest: An article of importance 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.