Reviewer’s report

Title: The Effect of Ventricular Assist Devices on Cerebral Autoregulation: an Observational Study

Version: 1 Date: 3 November 2010

Reviewer: Matthias Reinhard

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Major Compulsory Revisions:
1. The conclusion of disrupted autoregulation by pulsatile VAD does not seem fully warranted by the data: a) Both phase shift and gain as widely used parameters of dynamic cerebral autoregulation remain unaltered between VAD patients and controls. A higher coherence might be a sign of impaired autoregulation in some instances, but it is difficult to use this criterion alone as a sign of disrupted autoregulation. b) The study size of n=5 patients versus n=5 controls means that this is a pilot study with preliminary findings.

2. Patients&Controls: Cerebrovascular obstructive disease looked for? Stroke ruled out by neuroimaging?

3. Controls: to define whether autoregulation is disturbed or not particularly with VAD, a control population without structural heart disease and without dopamine infusion (probably affecting BP variability) would be more appropriate.

4. Given the small number of subjects and the high variability of spontaneous dCA measures, an autoregulation method with a better reproducible BP stimulus might have been considered.

5. Results of mean CBFV are not reported.

6. Phase shift is reported to be negative among controls (consistent with previous studies) in the Discussion section (p. 15, para 2). Results in Table 2 show different values: in LF range there is a positive phase in 4 of 5 subjects. Please check and clarify this point.

7. What is the clinical significance of the present findings in the authors’ opinion? Please discuss.

Minor Essential Revisions
1. Page 6, para 2: Rider and coworkers: citation number does not match
2. Page 8, para 3: Transcranial Colour Coded Sonography does not allow determination of the vessel diameter.
3. Table 1: Abbreviations should be named in legend
4. Table 2: VAD number: could this allow identification of patients? I would
suggest omitting numbers
5. Analysis of autoregulation from time series of 10 minutes contrasts to page 7, para 3: 30 minutes.
6. Some sentences in the Discussion are difficult to follow.

Level of interest: An article whose findings are important to those with closely related research interests

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