Reviewer's report

Title: Effects of fluid overload on heart rate variability in chronic kidney disease patients on hemodialysis

Version: 1 Date: 21 August 2013

Reviewer: pelagia koufaki

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REVIEWER’S REPORT

Major/compulsory revisions

Overall, this is a potentially interesting study to those with closely related research interests. However, I feel it needs to be re-written to clearly address the research question/s and the answers to those questions. As I read through the manuscript I felt that firstly, the research questions and hypotheses needed to be more clearly presented and justified and secondly, it was confusing which particular questions/hypotheses all the various data analyses really addressed. Moreover, the potential clinical or otherwise importance of the study findings needs to be discussed. How can these reported significant relationships between random indices of cardiac autonomic HRV and fluid overload be translated into clinical or research practice? How can clinicians/researchers/health professionals use these data?

ABSTRACT

1st para: It is now considered good reporting practice to avoid labelling individuals with their disease or disability. E.g. “chronic haemodialysis patients”. A more appropriate description could be “patients on chronic HD”. Please consider changing throughout.

The abstract lacks specificity and as currently reads, cannot stand on its own to clearly convey the rationale, methodology, analysis and main important findings from this observational study. The conclusion given is not supported by any reported data in the results section.

For example, the statement “Various HRV indices …were significantly correlated with FO in a way that indicates an association……” is not considered accurate scientific writing. Normally, reporting of the correlated variables, actual correlation coefficient and confidence intervals is expected.

Does not fully comply with instructions to authors as posted on line.

BACKGROUND

1st para: It is not immediately obvious how refs 1-2 support the first couple of statements. In fact throughout, the references cited do not always directly support statements made. Please review again. It is slightly discouraging that the most current research evidence used is one paper dated 2011, when there is
enough recent research specific to your study population and research outcomes that would add context and rationale to your study aims and research questions.

2nd para: You state that the aim is: “to investigate the relationship between fluid overload and alterations of the ANS…” What is the rationale and the hypothesis? What is meant by “alterations” and how these alterations of ANS in the current study are achieved? Explain the negative effect of diabetes on ANS the related research question and hypothesis that this study addresses and finally explain what is meant by “the robustness of results is tested……” what is the specific research question linked to this?

METHODS

3rd para: You mention here that patients had hydration status determined retrospectively. However, later on you state that hydration status was assessed before each HD treatment. The assumption is that the research team assessed patients and did not use retrospective classification. Please clarify. How many times patients were assessed? Were patients included in the analysis attending different dialysis shifts? The procedures for data collection need to be clearly stated. The methods section as it currently reads, could not be reproduced by other investigators. For example, how were BP data collected? HRV measures are highly influenced by internal and external environment factors, eg. Diet, sleep, temperature, noise, physical and mental state etc. How were the assessment procedures and conditions standardised?. It is also important for all readers, that the research variables used for analyses are defined and clear explanation as to what they represent, in terms of human physiology , is given. For example, what do the measures of SDANN, LF, LF%, LZC etc reflect? Not just how they are computed but which aspect of autonomic regulation do they actually represent and how can they be interpreted?

Statistical analyses:

This is a slightly confusing section. Please clearly list all analyses performed linked to the particular research questions they address and describe the statistical tests performed. If, as you have mentioned, HRV measure may be influenced by diabetes, dialysis vintage etc, then why have not controlled for these factors in your analyses? For example perform a partial correlation?

RESULTS

Limited and inconsistent presentation of research variables. Select some HRV indices that reflect the different components of the ANS modulation and report them consistently throughout to provide an accurate overall picture.

The tables are difficult to follow independent of text, as they do not all include the statistical analyses annotations.

I did not find that the included figures add any additional information, or highlight any important findings.

DISCUSSION

I felt the discussion was rather unfocused and did not draw attention to the importance and relevance of the findings from the current investigation.
**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

none