Reviewer's report

Title: Pulmonary Function and Exercise Tolerance in Pre-dialytic Patients with Chronic Kidney Disease: A Cross Sectional Study.

Version: 1 Date: 5 June 2012

Reviewer: Andrew Williams

Reviewer's report:

There is a wide range of evidence around the effect of end stage renal disease on exercise tolerance and the effect of various exercise training protocols on this. However, to date there is little published work on the effect of less advanced CKD on exercise tolerance and possible contributors to exercise tolerance in this population. This study provides interesting data related to exercise intensity and pulmonary function in CKD which may assist in the targeting of treatments designed to improve exercise tolerance and quality of life in this population. Nevertheless, the sample size is small and there are a number of issues that should be described in more detail.

Major Compulsory Revisions:

Methods
1. This is a small study with just 38 participants in total (29 with CKD) and there were a number of compared variables that approached significance between the groups in this study. It is possible this may be due to insufficient statistical power. However, there is no information presented regarding any calculation of required sample size on the basis of what constitutes a meaningful difference in the measured variables prior to the study. Was any such calculation performed and if so what sample size was identified?

2. Page 5, line 21: please identify whether the two sessions used for measurement of respiratory variables took place on the same day or separate days.

3. Page 6, line 10: Please list the criteria used to stop the CPET.

4. Page 7, line 8: More detail is required on which between group comparisons were assessed with ANOVA, or chi-squared, or Kruskal-Wallis or students t-tests. It is not necessary to list the variable but to identify the type of data i.e: normally distributed data was analysed using ANOVA....

5. Page 7, line 9: It needs to be clarified how the students t-tests were used given participants were divided into four separate groups. Were t-tests used as post-hoc tests or in another way?

Results

6. The methods states that data were calculated in a range of ways depending on the distribution. However, in the tables all data seems to be presented as
mean ±SD? Please clarify how data was presented in tables and where appropriate in the text.

7. A range of medications commonly taken by individuals with CKD and other chronic diseases have the potential to effect results of outcome measures in this study. Inclusion of a list of relevant medications taken by participants would provide valuable information. In addition discussion of the potential effects of these medications (eg. EPO) on outcome measures (if and where applicable) would be valuable.

8. FEV1 and FVC correlate with GFR in the current study. However the FVC and FEV1 were well above expected population values raising the question of whether they were an appropriate control group. What effect did their results have on the relationship between pulmonary function and GFR?

9. Peak HR during the CPET was lower in the CKD patients than the healthy controls which raises the issue of whether reduced exercise tolerance is due to pathophysiology or reduced motivation. Was any record kept of reasons for stopping the exercise test?

10. Table 1: please include details of significant results between groups for individual biochemical measures (as performed for other outcome measures in table 3).

Discussion

11. Page 10, lines 16-25: the relevance of this paragraph to the findings of the current study is unclear. The reason for including it needs to be better explained or the paragraph should be removed.

12. Reasons for poor exercise tolerance in CKD patients have been discussed including ventilatory changes as well as changes in cardiovascular or peripheral muscles. Other possible contributory factors that should be discussed are oxygen transport and altered buffering capacity given the significant results for haemoglobin and HCO3.

Minor Essential revisions:
1. Page 5, Line 8: parathormone intact molecule – I assume you mean Parathyroid Hormone Intact molecule?
2. Page 8, line 1: PRmax, VO2AT and HRmax need to be defined as they have not been previously defined in the text.
3. Page 8, line 10: Correct grammar in sentence beginning “Most studies of respiratory function…”
4. Page 8, line 16: Change coufounders to confounders
5. Page 10, line 14: members. Do you mean limbs?
6. Page 10, lines 16-25: remove quotation marks from around this paragraph.
7. Table 1: units for biochemical measures need to be included in the table.
8. Figure 2: please include units for GFR on x-axis.

Discretionary Comments:
1. Page 1, Title: It might be useful to include some detail of outcomes in the title. A suggested title is: Pulmonary function and Exercise Tolerance are related to disease severity in Pre-Dialytic Patients with Chronic Kidney Disease: A Cross-Sectional Study.

Discussion

2. It was not addressed as a hypothesis but it would be interesting to see the relationship between pulmonary function and exercise tolerance presented and discussed

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: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests