Reviewer’s report

Title: Serum phosphate and social deprivation independently predict all-cause mortality in chronic kidney disease.

Version: 0 Date: 19 Aug 2015

Reviewer: Wajeh Qunibi

Reviewer’s report:

Reviewer's Comments:

The primary aim of this small study was to assess the associations between baseline serum phosphate, deprivation and CKD outcome in a Scottish cohort of non-dialyzed CKD patients. Phosphate ≥1.50 mmol/L was associated with all-cause and cardiovascular mortality when compared to phosphate 0.90-1.09 mmol/L in multivariable analyses.

The authors concluded that multiple deprivation and serum phosphate were strong, independent predictors of all-cause mortality in CKD.

Background:

1. Concise and well written

Methods:

1. The 556 patients who had missing phosphate measurements and were excluded from the study were significantly younger, had lower PCR and less frequent diabetes, indicating that sicker older patients were the subjects of the study. This bias has likely overestimated the adverse outcomes. To clarify this issue further, I encourage the authors to address the following questions:
   a. What is the CKD stage distribution of exclude patients?
   b. How many of the excluded patients died during the follow-up period
   c. Can the authors characterize the deprived quintile of excluded patients?

2. What traditional cardiovascular risk factors were added to the statistical model and led to slightly weakened association between deprivation and mortality but not between phosphate and mortality?

Results:
1. The median follow-up period is short.

2. The cause of death could not be determined in one third of the deaths in this study. Please explain.

3. Have the authors looked at FGF23 levels? Studies have shown that FGF23 levels are associated with mortality independent of the serum phosphate.

Discussion:

1. As acknowledged by the authors, their finding that higher serum phosphate was an independent predictor of all-cause and cardiovascular mortality is not novel. This has been repeatedly shown previously.

2. Also, the finding that serum phosphate was significantly higher in patients from the most deprived areas is not novel

3. Increasing poverty has been shown to be independently associated with increased serum phosphate, higher likelihood of hyperphosphatemia, as well as with all-cause mortality

Conclusions:

Their conclusion that serum phosphate and area multiple deprivation index were independent predictors of all-cause mortality, while important, simply confirms previous findings.

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.

No

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

Yes

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.
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