Reviewer’s report

Title: The Chronic Kidney Disease Epidemiology Collaboration Equation combining Creatinine and Cystatin C Accurately Assesses Renal Function in Patients with Cirrhosis

Version: 0 Date: 14 Aug 2015

Reviewer: James Lohr

Reviewer’s report:

The authors correctly state that accurate determination of renal function in cirrhotics is a challenge and that it is important to determine this in evaluation of patients for liver transplant as well as to properly dose drugs being administered to these patients. They determined the measured GFR using a bolus sinistrin method in 50 cirrhotic patients and 24 age matched controls. They then measured creatinine and cystatin C and compared numerous GFR estimating equations to find which one performed the best in cirrhotic patients. They also looked at the effect of the level of serum bile acids on the performance of the GFR estimating equations. Overall they found that the CKD-EPI-Cr-CysC equation most accurately estimated GFR in cirrhotic patients. This was particularly good in identifying the patients with mGFR < 60 ml/minute. The small numbers of patients in each group are a limiting factor in being able to show any statistical differences between groups.

Comments

1. Methods:

Was the creatinine assay traceable to a standardized reference?

Was the CysC standardized?

2. Results:

Page 11, line 53. The results did not really correlate with increasing CPT score, as the bias for CG, MDRD, and CKD-EPI Cr were less with CTP3 than CPT2.

Page 12, line 59

Performance of the creatinine based equations was not worse in stage 3 compared to stage 2 CPT.

Page 13, top

CKD-EPI-CysC was really very comparable to Hoek or Larsson in the overall cirrhotic group.
Page 13, line 29. The authors state that the only statistically significant difference found in the study for P10 and P30 was between CKD-Epi-Cr-CysC equation and CG because of the small numbers. The statistical differences should be shown in Table 2. Were statistics done on the CC Pearson and CCC?

3. Discussion:

The discussion is well written.

Page 17. Not sure you can say that the classic inulin clearance is inferior to this bolus method.

4. Figures

Figure 1 Bland-Altman plots should show 95% confidence intervals.

Figure 2. Please state which individuals are included in this figure- it appears to be all cirrhotics. This figure is not really needed as all the information has been shown in Table 1.

I'm not convinced that the 10% accuracy is "considerably lower" in the other equations than the combined equation if this were to be analyzed statistically.

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.

Yes

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.

I recommend additional statistical review

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

**Declaration of competing interests**

Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal