Reviewer's report

Title: Predictive abilities of cardiovascular biomarkers to rapid decline of renal function in Chinese community-dwelling population: a 5-year prospective analysis

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Reviewer: Spiros Arampatzis

Reviewer's report:

This prospective multicentre analysis, performed in 1680 Chinese study participants which were recruited during a medical check-up program in several health service centers around Beijing, Shihui Fu et al. found a quite high overall median rate of renal function decline (1.46 mL/min/1.73m2/year) in 948 participants which had a follow up of 5 years. The authors found that mostly elderly, female patients and hypertensives experienced a rapid decline of renal function compared with others. In the multivariate analysis homocysteine and NT-proBNP were the only biochemical variables which were able to predict the primary outcome. Of interest arterial stiffness and compliance had no independent predictive power.

This is an overall interesting prospective study but suffers from some major methodological flaws. Representative epidemiological studies are based on randomised sampling methods but there is no information provided concerning the selection procedures/selection methods of the study participants.

Also although the number of participants lost to follow up was only 181 during follow up, almost 1/3 of the initial participants were excluded from the final analysis due to missing values of several variables rendering the overall study association and conclusions heavily biased and even not applicable. This is a major methodological flaw. Furthermore, no information about the missing participants are provided.

A quite remarkable finding is the overall median rate of renal function decline which is 1.46 mL/min/1.73m2/year and seems to be quite high, comparable to diabetic patients with CKD. Do the authors have an explanation for this finding?

Several clinical and biochemical biomarker such as hs-cTnT, cfPWV, cAIx had no statistically impact on the GFR decline but other such as homocysteine and NT-proBNP levels had. What is the relevance of these findings? How can we lower the homocysteine and natriuretic peptide levels in patients at risk for declining GFR?
Originality: As the authors already stated in their work several cardiovascular biomarkers such as homocysteine, N-terminal pro B-type natriuretic peptide (NT-proBNP) and high-sensitivity cardiac tropinin T (hs-cTnT) are already been explored in the setting of CKD and known to be elevated and associated with rapid kidney

* Scientific reliability/Research Question/Overall design of study /* Participants studied/ * Methods: This main aim of this study is clearly defined in the context of the provided data but the overall design of this study is rather vague since some important information are not adequate presented or missing. Although it is essential to perform long-term prospective study in order to explore and validate the predictive abilities of cardiovascular biomarkers concerning adverse outcomes a sound methodology and completeness of the study variables are equal important.

Importance of work to other relevant readers: This work provides further insights and information for GFR function decline in a Chinese study population.

Ethics: approval was granted and all patients gave their consent for the use of clinical data.

References: The papers cited are relevant and updated. No glaring omissions of related literature were noted.

Specific comments:

This manuscript need extensive language editing. The abstract has to been rewritten since the methodology section does not include crucial information on study design. The results section suffers from the same shortcomings. In the discussion section the reference to the work of other authors has be to adapted.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
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Yes

Are the conclusions drawn adequately supported by the data shown?
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No

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I recommend additional statistical review

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Please indicate the quality of language in the manuscript:

Not suitable for publication unless extensively edited

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