Reviewer's report

Title: Prognostic robustness of serum creatinine based AKI definitions in patients with sepsis: a prospective cohort study.

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Reviewer: Anne-Cornelie de Pont

Reviewer's report:

In this interesting paper, Vanmassenhove and colleagues analyzed the prognostic robustness of serum creatinine based definitions of acute kidney injury (AKI) in 195 consecutive patients with sepsis.

Major compulsory revisions:
- The authors should formulate a hypothesis in their introduction.
- Why did the authors choose for mortality at 3 months, 1 year and 2 years instead of the more commonly used 28-day, 60-day and 90-day mortality?
- In this small cohort of patients with sepsis, ICU mortality was relatively low (23%), since overall 28-day mortality due to sepsis is around 30% (Stevenson, Crit Care Med 2014). The authors should comment on this finding.
- In a large study among more than 120,000 ICU patients in Australia and New Zealand, AKI was defined by modified RIFLE criteria. Patients with septic AKI had an increased odds ratio for ICU and in hospital mortality when compared with patients with sepsis only (Bagshaw et al, Crit Care 2008). The authors should comment on this study in their discussion.
- In another large multicenter cohort of more than 16,000 ICU patients, the presence of AKI as defined by both the AKIN and RIFLE criteria had an increased odds ratio for hospital mortality (Joannidis, Intensive Care Med 2009). When the creatinine criterion was used alone, less patients were identified as having AKI. It is conceivable that identification of the AKI patients by the creatinine criterion alone occurred later in the AKI process, and that hospital mortality in this group was therefore higher. The authors should also comment on this study in their discussion.
- In the current study, the number of patients defined as having AKI by #ADM (n=27) was smaller than when #HIS (n=98) and #EST (n=89) were used. In analogy to the study by Joannidis, this might explain why only the creatinine criterion using #ADM yielded positive odds ratios for mortality. The authors should comment on this.
- Since the number of patients in the current study was relatively small, subgroup analysis of ICU survivors only is not appropriate.
- Due to the small number of patients, a type II error is not excluded. The authors should comment on this in their discussion.
Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

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.