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CRITICAL CARE

LETTER

# Severity of post-cardiac surgery acute kidney injury and long-term mortality: is chronic kidney disease the missing link?

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See related research by Lopez-Delgado *et al.*, http://ccforum.com/content/17/6/R293

While the retrospective cohort study by Lopez-Delgado and colleagues [1] suggests a strong association of the RIFLE classification and long-term mortality of acute kidney injury (AKI) after post-cardiac surgery, it has a number of limitations. The numbers of patients with pre-existing chronic kidney disease (CKD) or with non-recovery of renal function, *de novo* CKD or progression of CKD to stage V are not given. The authors used an obsolete definition of CKD and a modified RIFLE classification system for definition and grading of AKI.

Taken together, numerous studies underscore the strong association between AKI and *de novo* CKD. Severity, duration and frequency of AKI as well as age, comorbidities and pre-existing CKD are known risk factors for the development and/or progression of CKD [2]. Careful analyses of the cumulative mortality curves reported by Lopez-Delgado and colleagues or by our group [3] revealed a triphasic pattern. In the early phase, survival rates drop steeply due to critical illness, followed by a phase of smaller decline (caused by patient characteristics and development of CKD) and later on by a flatter survival curve attributable to the high cardiovascular mortality of progressive CKD [4].

Physicians need to consider the long-term sequels of severe AKI. Lopez Delgado and colleagues's study provides further arguments for an early follow-up of survivors of AKI by nephrologists.

## Authors' response

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We thank the authors for their comments and suggestions. Risk prediction in patients who suffer from post-operative AKI after cardiac surgery is becoming increasingly important today in decision-making regarding health care interventions. Thus, we agree that follow-up and long-term outcomes need to be reported as accurately as possible, especially for those patients who do not recover (totally or partially) renal function.

Nowadays, the definition of CKD is evolving and there are no definitive criteria [5,6]. In addition, development of risk scores for AKI corresponding to specific patient populations, such as cardiac surgery patients, is lacking [7]. However, Englberger and colleagues [8] have provided an approach with a modified RIFLE score.

We must keep in mind the close relationship between renal and cardiac function. The development of a cardiorenal syndrome after cardiac surgery is one of the major causes of AKI [9]. As a consequence, the second phase with a smaller decline in survival rates could be caused not only by development of *de novo* CKD but also by poor cardiac function after cardiac surgery.

In our opinion, patients with AKI should be evaluated after surgery not only by nephrologists, but even by a team including different specialities to provide a multidisciplinary approach.

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**Abbreviations**
AKI: Acute kidney injury; CKD: Chronic kidney disease.

**Competing interests**
The authors declare that they have no competing interests.

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