Editorial Comments

Time for an eGFR equivalent in AKI recognition?

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First they ignore, then they laugh, then they resist until they accept and finally they use it (Gandhi).

From time immemorial, innovations conform to the same rules until implementation. The need for a unified diagnosis and staging system of acute kidney injury (AKI) was recognized about a decade ago [1]. In 2004 and 2007, international consensus groups proposed standardized AKI definitions called RIFLE [2] or AKI Network (AKIN) classification [3] with similar prognostic value [4, 5]. The need for research on both classifications has been accepted by some and ignored by others. Although minimal creatinine increases relevant to patient outcome are included and both definitions are validated in several hundreds of thousands of patients, the RIFLE or AKIN definitions are used for AKI diagnosis in daily routine [6] only in a minority of institutions. Unlike estimated glomerular filtration rate (eGFR) for chronic kidney disease (CKD), there is no reporting of serum creatinine in hospitals that immediately identifies the presence of AKI, the way eGFR identifies the presence of CKD. This may cause harm to the patient, as shown by Ponce et al. [7].

The article by Ponce et al. [7] reported in the current issue of the Journal illustrates how difficult the collaboration between intensivists and nephrologists can be if such criteria are not used to work and communicate and suggests that a hospital-wide RIFLE or AKIN-based AKI alert system might improve patient care. The lack of implementation of the same AKI definition may lead to unnecessary delays in medical response. Ponce et al. investigated the potential influence of a (delayed) nephrological consultation in patients with AKI admitted to a Brazilian Intensive Care Unit (ICU), where dialysis initiation requires intensivist input as is also frequently observed in developed countries. Within the framework of the study, each intensivist used individual criteria for the decision to call for a nephrologist. The nephrologist, in a retrospective manner, the AKIN definition to identify the earliest possible time of being called. If the difference between actual and earliest possible call exceeded 48 h (delayed consultation), patients had the worst prognosis including an ICU mortality of 88% and very high blood urea nitrogen values at the initiation of dialysis. The key message might be that, in an open ICU system, where dialysis is nephrology unit dependent, a nephrologist should be called as early as possible.

A more important key question, however, might relate to why 50% of patients with (retrospectively identified) AKI had no nephrologist alert despite >70% presenting with severe AKI (Stage 2 or 3) and despite dialysis requiring nephrological alert.

A ‘not-for-resuscitation’ order seems an unlikely explanation given the similar severity of acute and chronic disease. In the study, reasons for the intensivist not contacting a nephrologist may have been related to local health care conditions such as potentially limited availability of dialysis machines, disagreements about overall management or political conflict. Yet, surely, lack of a common language to define AKI must have played a part. We suggest that we now need prospective observational studies and randomized controlled studies exploring a potential effect of nephrology consultation, when such common language criteria are in place. Future studies should report the reproducibility of decision-making (call criteria for a nephrologist, starting criteria for renal replacement therapy (RRT), number of dialysis machines etc.) in detail and should address the issue of responsibility for RRT initiation.

Irrespective of such consideration, in this study, RRT was initiated late when severe uremia was present. This is not general practice in the developed world whether nephrologists [8] or intensivists [9] prescribe RRT. This level of uremia makes it difficult to relate the study findings to resource-rich countries. Nonetheless, the findings by Ponce et al. are in line with a previous study by Mehta et al. [10] and a recently published study by Balasubramanian et al. [11] continuing to suggest that in some settings, delayed recognition and treatment of AKI within the ICU contributes to morbidity and mortality. Therefore, the need for a binding AKI diagnosis system in daily practical work is evident.

The RIFLE and AKIN classifications have yielded numerous investigations of their predictive ability, internal
validity, robustness and clinical relevance in a variety of clinical settings. For both AKI diagnosis classifications, a proportional mortality increase with increasing AKI severity has been reported [12]. Some calculation of a 50% creatinine increase from baseline to peak value and a decreased weight-adjusted urine output over rolling 6 h time periods at the bedside is necessary. Such mental arithmetic calculating creatinine increases for each and every hospitalized patient on every day is time consuming for the caring physician. Another impediment might be of financial nature given that at this stage, some hospitals are refunded for the relatively insensitive ICD 10-based AKI definition.

Thus, it is possible that many patients have suffered and suffer still due to outdated or subjective AKI definitions and the lack of an automated AKI alert system.

A user-friendly AKI alert system (e.g. an on-screen feature) based on the RIFLE/AKIN classification should help overcome some of these issues. Just like the laboratory now calculates the eGFR, it could easily calculate the e-RIFLE class or e-AKIN stage (where ‘e’ refers to electronically indicated) and the flow of information could follow Figure 1.

In a controlled interventional study from the USA, Balasubramanian et al. [11] used automated daily screening of fully computerized medical records and early nephrologist involvement at the time of AKI occurrence as defined by AKIN was introduced. Patients in the interventional group more frequently received renal diagnostic tests and interventions such as fluid therapy, adjusting diuretic dosage and holding angiotensin II converting enzyme inhibitors/angiotensin II receptor blockers therapy which was associated with a less frequent development of a >2.5-fold serum creatinine increase within hospital stay.

In conclusion, there is evidence that in the field of AKI, we now need to do what we have done in CKD: report the patient renal functional status in a way that triggers alerts and diagnostic and therapeutic responses. In future studies, even more sensitive novel biomarkers that detect early renal tubular damage [13, 14] could also be used to perfect such system. Irrespective of such biomarkers, however, we believe the time has come to vote for an e-AKI (electronically indicated) laboratory report in analogy to eGFR to help identify CKD. The longer we wait, the more patients will suffer.

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(See related article by Ponce et al. Early nephrology consultation can have impact on outcome of acute kidney injury patients. Nephrol Dial Transplant 2011; 26: 3202–3206.)

References


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