113

Acute Kidney Disease - a new definition, but is it useful in describing renal outcomes following AKI?

Dr Isma Kazmi[1], Mrs Rebecca Packington[1], Dr Nick Selby[1]
[1]*Centre For Kidney Research And Innovation,derby.University of Nottingham., Nottingham, United Kingdom*

Introduction

Acute Kidney Disease (AKD) is a term defined and advocated by the Acute Disease Quality Initiative (ADQI) in 2017 to describe ongoing renal dysfunction after AKI that persists beyond 7 days. As there is paucity of epidemiological data regarding AKD, we sought to study its relevance to long term renal outcomes.

Methods

We studied all patients from the AKI arm of a large parallel group cohort study of AKI. Participants were recruited following hospitalisation and followed up prospectively. Renal function and proteinuria were assessed at 3 months after AKI, then at 12 and 36 months. CKD progression was defined as a ≥25% decline in eGFR from baseline with a decline in eGFR stage. Patients were categorised into three groups depending on duration of AKI: AKI that resolved in <48hours (rapid recovery group, r-AKI), AKI duration of 2-6 days (persistent AKI, p-AKI) and AKD (as per ADQI definitions) as those with AKI duration ≥7 days. Outcomes were compared across these three groups.

Results

In total, 506 patients with AKI were studied. There were 109 (22%) in r-AKI group, 302 (60%) in p-AKI group and 95 (19%) with AKD. The proportions of patients with AKI stage 1, 2 and 3 were 58.1%, 25.3% and 16.6% respectively. Patients in the AKD group had lower baseline eGFR and a higher proportion of AKI stage 3. CKD progression was more common in AKD group as compared to other two groups. At one year, CKD progression was 46% in AKD group versus 11% (r-AKI) and 22% (p-AKI), $p<0.001$. Similar trends were seen at 3 years. In the AKD group, eGFR was lower at all time-points, and changed by a larger magnitude from baseline; at year 3, eGFR was 66.9±23ml/min, 60.1±20ml/min and 53±20ml/min in r-AKI, p-AKI and AKD groups respectively, $p<0.001$. Proteinuria was more common and severe in AKD group, with similar patterns seen in those without diabetes.

Using binary logistic regression analysis adjusting for age, gender, diabetic status, baseline eGFR, AKI stage and biochemical variables, AKD remained independently associated with CKD progression at 3 years (OR 2.8, 95%CI 1.4 5.5)

Conclusions: AKD is associated with several factors that increase risk of adverse outcomes (e.g. increased AKI stage, lower baseline renal function). However, AKI duration remains an important independent determinant of subsequent progression of kidney disease, and AKD appears to be a useful way to categorise this to identify patients at higher risk of long-term adverse outcomes