Commentary

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Is Diagnosis of Acute Kidney Injury Possible in Neonates?

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See article on page 16, RIFLE Criteria in Critically Ill Neonates with Acute Renal Failure

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Definition of acute kidney injury based on changes in serum creatinine and urine output is challenging especially in neonates. The serum creatinine in the first days of life is influenced by the serum creatinine of mother and the urine output is low during the first week of life. Therefore, using these two criteria to diagnose AKI in a newborn is unreliable and difficult.

pRIFLE has been developed to track the changes of serum creatinine and urine output during several days of hospitalization and to classify the severity of renal damage to risk, failure and injury. However, there are some criticisms to this classification for example, the patient must be followed for one week in order to make the diagnosis of AKI and this time laps might be too late for prevention of further damage [1, 2].

Mohkam et al conducted a cohort study to compare the traditional definition of acute renal failure and pRIFLE. Surprisingly, they showed that the old definition of ARF missed a huge number of neonates who suffered from AKI and pRIFLE despite its limitations still managed to detect the earliest stage of renal injury in neonates [3].

The author found direct correlation between the severity of AKI and the rate of mortality in neonates and also with grading of Neonatal Scoring System in NICUs. Acute kidney injury is not a cause of death by itself, but it reflects the severity of the underlying disease. Thus, neonates with a higher kidney injury and higher mortality had probably more severe sepsis or other organ failure. In our unpublished systematic review of Iranian studies on Acute Kidney Injury in Iranian neonates, we estimated the incidence of AKI between 2.5 and 5% among over 10000 neonates while using the old definition of renal failure. If definition of AKI improves and becomes more sensitive in detecting early stages of the disease, this incidence would be definitely much higher. Due to delayed diagnosis; any degree of AKI may have an adverse effect on renal function in long term; the study of Mohkam et al gives us a clue of how cautious we should be when managing critically ill neonates.

Utilizing novel biomarkers might help to improve our diagnosis of AKI in neonates and children [4].

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