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A Long Journey for Acute Kidney Injury Biomarkers

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Acute kidney injury (AKI) is a common and serious condition in critically ill patients, which is defined as a sudden decrease in kidney function that develops within 7 days. Although the prognosis of AKI has improved over time, the mortality rate in patients with AKI is still high, ranging from 20 to 60 %. In addition, patients experiencing AKI have adverse long-term outcomes, including an increased risk of progression to chronic kidney disease and end-stage renal disease. This limited advance in improving the outcomes of AKI can be related to the problem of diagnosing AKI. Traditionally, functional biomarkers, serum creatinine and urine output, are used to define AKI, however, these are limited by delayed changes after kidney injury and have low sensitivity and specificity.

In this context, continuous effort has focused on identifying biomarkers reflecting a pathophysiologic process in the nephron during AKI and considerable progress has been made over the decade. However, the utility of novel biomarkers is largely confined to research studies, whereas widespread clinical applicability is limited. In this lecture, various traditional and emerging biomarkers are summarized and the reasons for the delay in clinical use of biomarkers are discussed. In addition, I would like to review the potential clinical applications of biomarkers in AKI, from risk assessment to prognostic estimation.